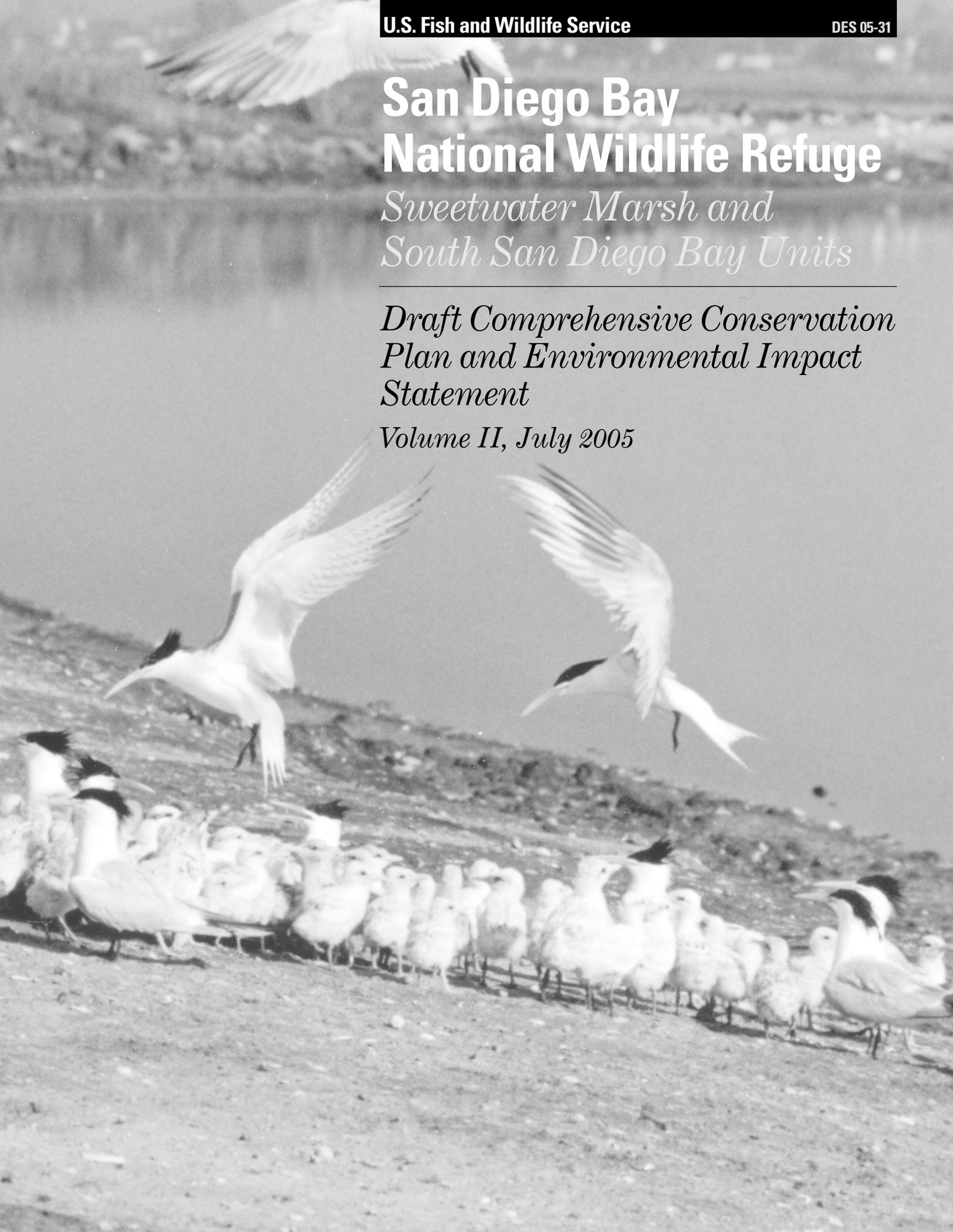


San Diego Bay National Wildlife Refuge

*Sweetwater Marsh and
South San Diego Bay Units*

*Draft Comprehensive Conservation
Plan and Environmental Impact
Statement*

Volume II, July 2005



San Diego Bay National Wildlife Refuge Sweetwater Marsh and South San Diego Bay Units

*Draft Comprehensive Conservation Plan/
Environmental Impact Statement
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Vision Statement

The San Diego Bay National Wildlife Refuge functioning as an island of native habitat in a sea of urban development, protecting nesting, foraging, and resting sites for the diverse assembly of migratory birds. Shorebirds and wintering waterfowl stop here to feed and rest as they travel along the Pacific Flyway. Undisturbed expanses of cordgrass-dominated salt marsh support sustainable populations of light-footed clapper rails, while other enhanced and restored wetlands create new, high quality habitat for salt marsh bird's beak and other rare wetland plants. Quiet nesting areas, buffered from adjacent urbanization, ensure the reproductive success of western snowy plovers, California least terns, and an array of colonial nesting seabirds.

People with diverse interests from a range of age groups participate as stewards in innovative and informative environmental education and interpretation programs. They come to the Refuge to observe wildlife, appreciate the cultural history and past uses that occurred here, and gain a deep understanding that these wild places are more than land and water; they are treasures to be enjoyed by this generation and a legacy to be protected for future generations.

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July 2005

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Appendix A

Glossary of Terms

Appendix A: Glossary of Terms

1. Acronyms and Abbreviations

AAR	Acquisition Ascertainment Report
ACHP	Advisory Council on Historic Preservation
ACOE	United States Army Corps of Engineers
ADA	Americans with Disabilities Act
ADT	average daily traffic volumes
AHPA	Archaeological and Historic Preservation Act
Airport Authority	San Diego County Regional Airport Authority
APCD	San Diego Air Pollution Control District
APE	Area of Potential Effect
ARB	California Air Resources Board
ARPA	Archaeological Resources Protection Act
BCR	Bird Conservation Regions
BMPs	Best Management Practices
BOD	biological oxygen demand
Caltrans	California Department of Transportation
CAP	Contaminant Assessment Process
CAAQS	California Ambient Air Quality Standards
CCP	Comprehensive Conservation Plan
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeter
CNEL	Community Noise Equivalent Level
CO	Carbon monoxide
Code	California Fish and Game Code
combined federal project	Sweetwater River Flood Control Channel/State Highway Route 54/Interstate 5 Project
Commission	California State Historic Resources Commission
Complex	San Diego National Wildlife Refuge Complex
County	County of San Diego
CRMP	Cultural Resources Management Program
dB	decibel
dBA	A-weighted” noise scale
dB Leq	noise levels presented as average noise levels over a period of minutes or hours
DDT	Dichlorodiphenyltrichloroethane
DEA	Draft environmental assessment
DEIS	Draft Environmental Impact Statement
DOI	Department of the Interior
DU	Ducks Unlimited

EA	environmental assessment
EBS	Environmental Business Solutions, Inc.
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FR	Federal Register
FTE	full-time equivalent
FY	Fiscal Year
gpm	gallons per minute
HMP	Habitat Management Plan
HRB	Historical Resources Board (City of San Diego)
HUD	U.S. Department of Housing and Urban Development
I-5	Interstate 5
Improvement Act	National Wildlife Refuge System Improvement Act of 1997
INRMP	San Diego Bay Integrated Natural Resources Management Plan
kV	kilovolt
LCP	Local Coastal Program
LEA	County of San Diego Department of Environmental Health, Solid Waste Local Enforcement Agency
Ldn	Day/Night Average Sound Level
LOS	Level of Service
LPP	Land Protection Plan
m ²	square meter
μg/m ³	micrograms per cubic meter
MBTA	Migratory Bird Treaty Act
MHHW	mean higher high water
MHPA	Multi-Habitat Planning Area, as defined in the City of San Diego's Multiple Species Conservation Program Subarea Plan
MHW	mean high water
MLLW	mean low low water
MOA	memorandum of agreement
MOU	Memorandum of Understanding
MPAs	Marine Protected Areas
mph	miles per hour
MSCP	Multiple Species Conservation Program
MSL	Mean Sea Level
MTDB	Metropolitan Transit Development Board
Municipal Permit	Municipal Storm Water NPDES Permit
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NASNI	Naval Air Station, North Island
NGOs	non-government organizations
NEPA	National Environmental Policy Act
NGDV	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO ₂	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOLF	Navel Outlying Landing Field, Imperial Beach

NO _x	Oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NRRF	Naval Radio Receiving Facility
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
O ₃	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OVRP	Otay Valley Regional Park
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PM ₁₀	fugitive dust emissions or “inhalable particles” that are 10 microns (millionths of a meter) or less in diameter
PM _{2.5}	fine inhalable particles that are 2.5 microns and smaller
Port	Unified Port of San Diego (formerly San Diego Unified Port District, SDUPD)
ppm	parts per million
ppt	parts per thousand
PRISM	Program for Regional and International Shorebird Monitoring
PWC	personal watercraft
ROD	Record of Decision
RONs	Refuge Operating Needs System
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SDUPD or Port	San Diego Unified Port District, now referred to as the Unified Port of San Diego
Service	U.S. Fish and Wildlife Service (also, USFWS)
SHPO	State Historic Preservation Office
SO ₄	Sulfates
SOHO	Save Our Heritage Organization
SR 56	State Route 56
SSA	Special Study Area
State	California Department of Fish and Game
SUP	Special Use Permit
SWIA	Southwest Wetlands Interpretive Association
SWRCB	California State Water Resources Control Board
TACAN	instrument approach for NASNI
TBT	tributyltin
TEA-21	Transportation Enhancement Act for the 21 st Century
THPO	Tribal Historic Preservation Officer
TOT	transit occupancy taxes
TRPH	total recoverable petroleum hydrocarbons
USC	United States Code
USDA	U.S. Department of Agriculture
USDA APHIS	U.S. Department of Agriculture, Animal Plant Health Inspection Service
USFWS	U.S. Department of the Interior, Fish and Wildlife Service (also, Service)
VFR	visual flight rules
VOC	volatile organic compounds

2. Glossary of Terms

Abiotic. The non-living parts of an ecosystem (e.g. light, temperature, water, oxygen, and other nutrients or gases).

Accessibility. The state or quality of being easily approached or entered, particularly as it relates to complying with the Americans With Disabilities Act.

Accumulation. The build-up of a chemical in an organism due to repeated exposure.

Adaptive Management. The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. A process that uses feedback from refuge research and monitoring and evaluation of management actions to support or modify objectives and strategies at all planning levels. Analysis of results help managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Alluvial. Clay, silt, sand, gravel or other sedimentary matter transported and deposited in a delta or riverbed by flowing water.

Alternative. A reasonable way to fix an identified problem or satisfy a stated need, or a different set of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the refuge system mission, and resolving issues.

Approved Acquisition Boundary. A project boundary that the Director of the Service approves upon completion of the planning and environmental compliance process. An approved acquisition boundary only designates those lands which the Service has authority to acquire or manage through various agreements. The approval of an acquisition boundary does not grant the Service jurisdiction or control over lands within the boundary, and it does not make lands within the refuge boundary part of the National Wildlife Refuge System. Lands do not become part of the System until the Service buys them or they are placed under an agreement that provides for their management as part of the System.

Aquatic. Pertaining to water, in contrast to land.

Artifact. An object used or made by humans, usually in reference to projectile points, tools, utensils, art, food remains, and other products of human activity.

Benthic. Refers to organisms associated with the bottom of the ocean, bay, lake, or river.

Biodiversity (Biological Diversity). Refers to the full range of variability within and among biological communities, including genetic diversity, and the variety of living organisms, assemblages of living organisms, and biological processes. Diversity can be measured in terms of the number of different items (species, communities) and their relative abundance.

Biological Integrity. Biotic composition, structure, and functioning at the genetic, organism, and community levels consistent with natural conditions, including the natural biological processes that shape genomes, organisms, and communities.

Biota. The plant and animal life of a region.

Bivalve. Common term for pelecypods (members of Mollusca) in which the hard parts are composed of two sections fitting together to enclose a space that contains the soft part of the organism.

Categorical Exclusion. A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act.

Compatibility Determination. A written determination that a proposed or existing use of a National Wildlife Refuge is a compatible use or is not a compatible use.

Compatible Use. A proposed or existing wildlife-dependent recreational use or any other use of a National Wildlife Refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System Mission or the purposes of the Refuge on which the use would occur.

Comprehensive Conservation Plan (CCP). A document that describes the desired future conditions of the refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge, helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates.

Concern. See issue.

Critical Habitat. According to U.S. Federal law, the ecosystems upon which endangered and threatened species depend.

Cultural Resource. The physical remains of human activity (artifacts, ruins, petroglyphs, etc.) and conceptual content or context of an area such as a traditional sacred site. It includes historically, archaeologically and architecturally significant resources.

Cultural Resource Inventory. A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4.

Cultural Resource Overview. A comprehensive document prepared for a field office that discusses, among other things, its prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement on how program objectives should be met and conflicts resolved.

Detritus. An accumulation of decomposing plant and animal remains.

Dioxin. A family of toxic chemicals, including polychlorinated biphenyls (PCBs), that all share a similar chemical structure and a common mechanism of toxic action. Dioxin levels in the environment have been declining; however, current exposures levels still remain a concern.

Disturbance. Significant alteration of habitat structure or composition. May be natural (e.g., fire) or human-caused events (e.g., aircraft overflight). Also see wildlife disturbance.

Easement. A privilege or right that is held by one person or other entity in land owned by another.

Ecological Integrity. The integration of biological integrity, natural biological diversity, and environmental health; the replication of natural conditions.

Ecoregion. A territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system of related, interconnected ecosystems.

Ecosystem. A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

Ecosystem Approach. Protecting or restoring the natural function (processes), structure (physical and biological patterns), and species composition of an ecosystem, recognizing that all components are interrelated.

Ecosystem Management. Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.

Effect. A change in a resource, caused by a variety of events including project attributes acting on a resource attribute (direct), not directly acting on a resource attribute (indirect), another project attributes acting on a resource attribute (cumulative), and those caused by natural events (e.g., seasonal change).

Endangered Species (Federal). A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.

Endangered Species (State). A plant or animal species in danger of becoming extinct or extirpated in California within the near future if factors contributing to its decline continue.

Environment. The sum total of all biological, chemical, and physical factors to which organisms are exposed; the surroundings of a plant or animal.

Environmental Assessment (EA). A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an Environmental Impact Statement or Finding of No Significant Impact.

Environmental Education. A process designed to develop a citizenry that has the awareness, concern, knowledge, attitudes, skills, motivation, and commitment to work toward solutions of current environmental problems and the prevention of new ones. Environmental education within the National Wildlife Refuge System incorporates materials, activities, programs, and products that address the citizen's course of study goals, the objectives of the refuge or unit, and the mission of the Refuge System.

Environmental Health. Abiotic composition, structure, and functioning of the environment consistent with natural conditions, including the natural abiotic processes that shape the environment.

Environmental Impact Statement (EIS). A detailed written statement required by Section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

Epibenthic. Pertaining to the environment and conditions of organisms living near the water bottom.

Estuarine. Deepwater tidal habitats and adjacent tidal wetlands that are usually partly enclosed by land but have some access to the open ocean and are diluted by freshwater.

Estuary. The wide lower course of a river into which the tides flow. The area where the tide meets a river current.

Euryhaline. Organisms that are tolerant of a wide range of salinity.

Exotic Species. Species that have been intentionally introduced to or have inadvertently infiltrated an area in which they are not natural found. Exotic species compete with native species for food or habitat.

Fallow. Allowing land that normally is used for crop production to lie idle.

Federal Trust Resources. A trust is something managed by one entity for another who holds the ownership. The Service holds in trust many natural resources for the people of the United States of America as a result of Federal acts and treaties. Examples are species listed under the Endangered Species Act, migratory birds protected by the Migratory Bird Treaty Act and other international treaties, and native plant or wildlife species found on the Refuge System.

Finding of No Significant Impact (FONSI). A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).

Floodplain. The relatively flat area along the sides of a river which is naturally subjected to flooding.

Fluvial. Pertaining to a river.

Flyway. A route taken by migratory birds between their breeding grounds and their wintering grounds. Four primary migration routes have been identified for birds breeding in North America: the Pacific, Central, Mississippi, and Atlantic Flyways.

Foraging. The act of feeding; another word for feeding.

Forb. A broad-leaved, herbaceous plant.

Fragmentation. The process of reducing the size and connectivity of habitat patches.

Gastropod. Any of a large class of mollusks, usually with a univalve shell or no shell and a distinct head bearing sensory organs, such as snails and slugs.

Goal. Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units.

Habitat. Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.

Habitat Fragmentation. The breaking up of a specific habitat into smaller, unconnected areas.

Habitat Restoration. Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.

Habitat Type. See Vegetation Type.

Hydrologic Regime. The local pattern and magnitude of water flow influenced by season.

Hydrology. The science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere. The distribution and cycling of water in an area.

Impact. Refer to Effect.

Integrated Pest Management (IPM). Methods of managing undesirable species, such as weeds, including education; prevention, physical or mechanical methods or control; biological control; responsible chemical use; and cultural methods.

Interpretation. Interpretation can be an educational and recreational activity that is aimed at revealing relationships, examining systems, and exploring how the natural world and human activities are interconnected.

Intertidal Mudflat. Expanses of mud contiguous to a water body often covered and exposed by tides.

Invasive Species. Refer to Exotic Species.

Inversion. A state in which the temperature of the air increases with increasing altitude and keeps the surface air and pollutants down.

Invertebrate. Animals that do not have backbones. Included are insects, spiders, mollusks (clams, snails, etc.), and crustaceans (shrimp, crayfish, etc.).

Issue. Any unsettled matter that requires a management decision (e.g., a Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition).

Landbird. A category of birds that obtains at least part of their food from the land and nest in mainland areas (though some can also be found on islands). Landbirds include raptors and songbirds among others.

Landform. The physical shape of the land reflecting geologic structure and processes of geomorphology that have sculpted the structure.

Landowner: A person or entity indicated as the owner of property on the various ownership maps maintained by the Office of the County Assessor.

Lease. A legal contract by which rights to use land or water are acquired for a specified period of time for a specified rent or compensation.

Levee. An embankment along the river or other body of water that retains water within the water body.

Macroinvertebrates. Invertebrates large enough to be seen with the naked eye (e.g., most aquatic insects, snails, and amphipods).

Management Alternative. A set of objectives and the strategies needed to accomplish each objective [FWS Manual 602 FW 1.4].

Management Concern. Refer to Issue.

Marsh. A periodically wet or continually flooded area where the water is shallow enough to allow the growth of emergent vegetation; a marsh can be influenced by freshwater, tides, or both.

Marsh Habitat. Habitat that is characterized by shallow water and emergent vegetation; unless otherwise specified, this term does not apply to similar habitat found in rivers, drains, or canals.

Migration. The seasonal movement from one area to another and back.

Migratory Bird. A bird that seasonally moves between geographic areas.

Mitigation. To avoid or minimize impacts of an action by limiting the degree or magnitude of the action; to rectify the impact by repairing, rehabilitating, or restoring the affected environment; to reduce or eliminate the impact by preservation and maintenance operations during the life of the action.

Model. A mathematical formula that expresses the actions and interactions of the elements of a system in such a manner that the system may be evaluated under any given set of conditions.

Monitoring. The process of collecting information to track changes of selected parameters over time. Monitoring is necessary to identify, track and analyze results of management actions at the Refuge so that future management actions may be adapted to obtain the best benefits to wildlife and habitat. See also Adaptive Management.

National Environmental Policy Act (NEPA). An act which encourages productive and enjoyable harmony between humans and their environment, to promote efforts that will prevent or eliminate damage to the environment and atmosphere, to stimulate the health and welfare of

humans. The act also established the Council on Environmental Quality. The Act requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making.

National Wildlife Refuge (Refuge or NWR). A designated area of land or water or an interest in land or water within the Refuge System, including National Wildlife Refuges, Wildlife Ranges, Wildlife Management Areas, Waterfowl Production Areas, and other areas (except Coordination Areas) under Service jurisdiction for the protection and conservation of fish and wildlife.

National Wildlife Refuge System. Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters, and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). Under the Refuge Improvement Act, the Service is required to develop 15-year Comprehensive Conservation Plans for all National Wildlife Refuges outside Alaska. The Act also describes the six public uses given priority status within the NWRs (i.e., hunting, fishing, wildlife observation, photography, environmental education, and interpretation).

National Wildlife Refuge System Mission. "The mission of the system is to administer a National network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

Native Species. Species that normally live and thrive in a particular ecosystem.

Natural Recruitment. Plant establishment through natural processes.

Neotropical Migratory Birds. Migratory birds that breed in North America and winter in Central and South America.

No Action Alternative. An alternative under which existing management would be continued.

Notice of Intent (NOI). A notice that is published in the Federal Register announcing that an Environmental Impact Statement will be prepared and considered for a specific action.

Objective. An objective is a concise target statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies. Objectives should be attainable and time-specific and should be stated quantitatively to the extent possible. If objectives cannot be stated quantitatively, they may be stated qualitatively.

One-Hundred-Year Floodplain. The relatively flat portion of the river channel that has a one percent chance of being inundated by flood water in any given year.

Opportunities. Potential solutions to issues.

Ordinary High Water Mark. That line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Outreach. Two-way communication between the Service and the public to establish mutual understanding, promote involvement, and influence attitudes and actions, with goal of improving joint stewardship of our natural resources.

Overbank Flooding. River flows that exceed the boundaries of the existing river channel and/or levees and flood adjacent areas.

Passerine Bird. A songbird or other perching bird that is in the order Passeriformes (blackbirds, crows, warblers, sparrows, and wrens for example).

Peak Flow. The maximum discharge of a stream or river during a specified period of time.

Perennial. In reference to a body of water, one that contains water year-to-year and that rarely goes dry.

Permeability. The property or capacity of porous rock, sediment, or soil to transmit water.

Personal Watercraft. Personal watercraft (PWC) are small vessels that use inboard motors to power water jet pumps. They are known by such trade names as Jet-ski, Waverunner, and Sea-Doo. Personal watercraft are high performance vessels, designed for speed.

Phenology. The life cycle of particular species.

Planning Area. The area upon which a planning effort is focused.

Planning Team. A team or group of persons working together to prepare a document. Planning teams are interdisciplinary in membership and function and generally consist of a planning team leader, refuge manager and staff biologists, a state natural resource agency representative, and other appropriate program specialists (e.g., social scientist, ecologist, recreation specialist).

Planning Unit or Unit. A single refuge, an ecologically or administratively related refuge complex, or distinct unit of a refuge. The planning unit also may include lands currently outside refuge boundaries.

Plant Association. A classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.

Plant Community. An assemblage of plant species of a particular composition. The term can also be used in reference to a group of one or more populations of plants in a particular area at a particular point in time; the plant community of an area can change over time due to disturbance (e.g., fire) and succession.

Pollutant or Contaminant. Any introduced gas, liquid, or solid that makes a resource unfit for a specific purpose.

Polychaetes. Any of a class (Polychaeta) of chiefly marine annelid worms (such as clam worms), usually with paired segmental appendages, separate sexes, and a free-swimming trochophore larva.

Polychlorinated Biphenyls (PCBs). A mixture of individual chemicals which are no longer produced in the United States, but are still found in the environment.

Polycyclic Aromatic Hydrocarbons (PAHs). A group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Population. All the members of a single species coexisting in one ecosystem at a given time.

Preferred Alternative. This is the alternative determined by the decision maker to best achieve the Refuge purpose, vision, and goals; contributes to the Refuge System mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management.

Prescribed Fire. The skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., that allows confinement of the fire to a predetermined area and produces the intensity of heat and rate of spread to accomplish planned benefits to one or more objectives of habitat management, wildlife management, or hazard reduction.

Prime Farmland. Farmland in an area or region that is considered to be the most ideal farmland based on several criteria; usually soil types and land productivity of the land are two of the most important criteria.

Priority Public Uses. Compatible wildlife-dependent recreation uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).

Proposed Action. The Service's proposed action for Comprehensive conservation Plans.

Public. Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.

Public Involvement. A process that offers impacted and interested individuals and organizations an opportunity to become informed about, and to express their opinions on Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

Public Scoping: See Public Involvement.

Purpose(s) of the Refuge. The purpose of a refuge is specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorization, or expanding a refuge, refuge unit, or refuge subunit.

Raptor. A category of carnivorous birds, most of which have heavy, sharp beaks, strong talons, and take live prey (e.g., peregrine falcon, northern harrier). Also referred to as a bird of prey.

Record of Decision (ROD). A concise public record of decision prepared by the Federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation.

Recruitment. The annual increase in a population as determined by the proportion of surviving offspring produced during a specific period (usually expressed per year).

Refuge Goal. Refer to Goal.

Refuge Operating Needs System (RONS). A national database that contains the unfunded operational needs of each refuge. The Service includes projects required to implement approved plans and meet goals, objectives, and legal mandates.

Refuge Purposes. Refer to Purposes of a Refuge.

Refuge Revenue Sharing Program. Provides payments to counties in lieu of taxes using revenues derived from the sale of products from refuges.

Refuge Use. Any activity on a refuge, except administrative or law enforcement activity carried out by or under the direction of an authorized service employee.

Refuge Vision. A succinct statement of the unit's purpose and reason for being.

Restoration. The return of an ecosystem to an approximation of its former unimpaired condition.

Revetment. A facing of stone, concrete, or other material placed on a riverbank to protect it from erosion.

Rhizomes. Rootlike stem growing horizontally below the surface. The rhizome is used for food storage and can produce roots and shoots.

Riparian. Refers to an area or habitat that is transitional from terrestrial to aquatic ecosystems; including streams, lakes wet areas, and adjacent plant communities and their associated soils which have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; of or relating to a river; specifically applied to ecology, "riparian" describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes any and all plant life growing on the land adjoining a stream and directly influenced by the stream.

Riparian Area. A transitional between terrestrial and aquatic ecosystems, distinguished by gradients in biophysical conditions, ecological processes, and biota; areas through which surface and subsurface hydrology connect waterbodies with their adjacent uplands.

Riparian Habitat. Gravel bars, sand dunes, non-vegetated riverbanks, herbaceous, scrub and forested vegetation, which provides habitat for plants, macro-invertebrates, fish and wildlife.

Riverine. Freshwater wetlands and deepwater habitats within a channel containing periodically or continuously moving water. It includes wetlands with primarily or mostly submerged vegetation but does not include those wetlands with mostly emergent vegetation or shrubs and trees. This habitat encompasses a river or stream, its channel, and the associated aquatic vegetation. Can also pertain to rivers and floodplains.

Seabird. A group of birds that obtain at least some food from the ocean by traveling some distance over its surface. They also typically breed on islands and along coastal areas. Seabirds include gulls, terns, pelicans, and cormorants, among others.

Sediment. Any material, carried in suspension by water, which ultimately settles to the bottom of water courses. Sediments may also settle on stream banks or flood plains during high water flow.

Shorebirds. Long-legged birds, also known as waders, belonging to the order Charadriiformes, which use shallow wetlands and mud flats for foraging and nesting.

Soil Erosion. The wearing away of the land's surface by water, wind, ice, or other physical process.

Songbirds. A category of birds that are medium to small, perching landbirds. Most are territorial singers and migratory. (Refer also to Passerines.)

Sound Professional Judgment. A finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of the Refuge Administration Act of 1966 (16 U.S.C. 668dd-668ee), and other applicable laws. Included in the finding, determination, or decision is a refuge manager's field experience and knowledge of the particular refuge's resources.

Species. A distinctive kind of plant or animal having distinguishable characteristics, and that can interbreed and produce young. A category of biological classification.

Species Composition. A group of species that inhabit a specific habitat type in its healthy state.

Species Diversity. Usually synonymous with "species richness," but may also include the proportional distribution of species.

Step-down Management Plan. A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives.

Strategy. A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives.

Study Area. The area reviewed in detail for wildlife, habitat, and public use potential. For purposes of this CCP/EIS the study area includes the land and water within the approved Refuge boundary.

Sublittoral. Relating to or describing an organism living immediately below low-tide level.

Submergent Vegetation. Plants that grows completely submerged except when flowering.

Subsidence. Movement to a lower level or elevation.

Surface Water. A body of water that has its upper surface exposed to the atmosphere.

Terminus. In reference to a stream or river, its end point; where it flows into a lake or other basin.

Threatened Species (Federal). Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Tiering. The coverage of general matters in broader environmental impact statements with subsequent narrower statements of environmental analysis, incorporating by reference, the general discussions and concentrating on specific issues.

Trace Elements. Metallic elements generally occurring in trace amounts in water, including iron, manganese, copper, chromium, arsenic, mercury, and vanadium.

Turbidity. Cloudiness of a water body caused by suspended silt, mud, pollutants, or algae.

U.S. Fish and Wildlife Service Mission. "Working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Understory. Shrubs and herbaceous plants that typically grow beneath larger trees or shrubs.

Upland. An area where water normally does not collect and where water does not flow on an extended basis. Uplands are non-wetland areas.

Vegetation. The composition of plant species, their frequency of occurrence, density, and age classes at a specified scale.

Vegetation Community. Refer to Plant Community.

Vegetation Type or Habitat Type. A land classification system based upon the concept of distinct plant associations.

Waterfowl. A group of birds that include ducks, geese, and swans (belonging to the order Anseriformes).

Watershed. The entire land area that collects and drains water into a river or river system.

Wetland. Land that is transitional between upland (terrestrial) and aquatic systems (greater than about 6-feet deep) where the water table is usually at or near the surface or the land is covered by shallow water.

Wetland Habitat. Habitat provided by shallow or deep water (but less than 6-feet deep), with or without emergent and aquatic vegetation in wetlands. Wetland habitat only exists when and where a wetland or portion of a wetland is covered with water (visible surface water). Consequently, the size and shape of "wetland habitat" will fluctuate from season to season and year to year while the

size and shape of the "wetland" within which wetland habitat occurs will remain constant from season to season and from year to year.

Wildfire or Wildland Fire. A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands.

Wildlife. All non-domesticated animal life; included are vertebrates and invertebrates.

Wildlife Corridor. A landscape feature that facilitates the biologically effective transport of animals between larger patches of habitat dedicated to conservation functions. Such corridors may facilitate several kinds of traffic, including frequent foraging movement, seasonal migration, or the once in a lifetime dispersal of juvenile animals. These are transition habitats and need not contain all the habitat elements required for long-term survival of reproduction of its migrants.

Wildlife-Dependent Recreational Use. "A use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation." These are the six priority public uses of the Refuge System as established in the National Wildlife Refuge System Administration Act, as amended.

Appendix B
Distribution List

Appendix B: Distribution List

The following individuals, organizations, local businesses, Tribal governments, interested media, public agencies, and elected officials received notice of the availability of the San Diego Bay National Wildlife Refuge (Sweetwater Marsh and South San Diego Bay Units) Draft Comprehensive Conservation Plan/Environmental Impact Statement.

Individuals

Acheatel, David	Biggart, Neal	Case, Ted J.
Adams, Duane	Bitterling, Andrea	Cassedy, Marilyn & Tim
Adams, Lissa	Bittner, Dave	Cassidy, Nancy
Adler, Gerrold	Boland, John	Cavanaugh, Jim
Aguila, Gabriela	Bonamassa, Lois	Cave, Mrs. Judith
Aguilar, Maricela	Borrelli, Rosie	Celso, Juanito
Aguirre, Barbara	Borzik, Joette	Cerda, Irma
Alfaro, Monica	Bourne, Helen	Chacez, Lisa
Allds, Richard	Bowlby, Eric	Charvet, Jan
Almanza, Lindsay	Bowling, Dennis	Chase, C.D.
Amador, Luz	Boyer, David	Cherney, Dan
Anderson, Barbara	Boze, Bob & Sheryl	Chesser, Tammy
Anderson, John	Brady, Kristine	Christian, Maria
Ansley, Wayne	Bragg, Lorie	Christianson, Jack
Armour, Mike	Bransford, Jack	Christopherson, I. M.
Arzola, Raul	Breslauer, Ann	Clark, Maxine
Ayala, Leticia	Brienza, David	Cline, C.
Backal, Jack	Brienza, Ralph	Cline, Sandra
Baclagan, Cynthia	Bruce, Arlette	Clopp, David
Baird, Terry	Buffett, Brad	Coatsworth, Jim
Ball, Alan	Bulizak, Rose	Collins, Asa
Ballis, Douglas	Burkhart, Brad	Collins, Dr. Charles
Barienbrock, Gordon	Burleson, Charlene	Collins, Dr. Tom
Barlow, Michelle	Burns, Jim	Conrad, Jim
Barmann, Mark & Jan	Burrascano, Cindy	Cook, Shirley
Barnes, Bruce	Butler, Liza	Cooke, Patti
Barnes, Lynnette	Butts, Nancy	Copelan, Jerome
Barnum, PhD Douglas	Byington, Cindy	Copper, Elizabeth
Barrows, Karen	Cagle, Fred	Correnti, Ruth
Barsz, Bill	Camozzi, Josie	Cousino, Don
Bartell, Richard	Campbell, Leon	Cowling III, William
Batze, Bonnie	Canedo, Karina	Cox Cheryl
Baumgardner, John	Cantrell, Patricia	Crabb David
Beam, Craig	Capper, Carol Ann	Cramer, Cynthia
Beck, Michael	Cardenas, Josefina	Crane, Jeane
Beckwith, Diane	Carey, Debra	Cronk, Jim
Beh, Richard	Carpenter, Raymond	Crooks, Jeff
Bernache, Brenda	Carson, Susan & Webb	Crouch, Laura
Bertsch, Dr. Hans	Carvajal, Joseph	Cruz, Arnie
Biddlecome, Kelly M.	Casady, Derek & Nancy	Cuevas, Claudia

Curran, Gloria	Fisher, Robert A.	Herd, Herman & Greida
Dale, Jenica	Flom, Beryl	Hernandez, Adam
Dang, Emily	Flores II, Rodolfo D	Hernandez, Augustine
Daugherty, Jim & Linda	Flores, Kevin	Hernandez, Cinthia
Davenport, Robert E.	Ford, Richard	Hess, Carleen
Davis, Bill & Shannon	Fowler, Russell	Hewitt, Cliff
De Anda, Jr. Alfonso	Franks, Dr. Peter	Hills, Richard
Dederick, Art	Fraser, David	Hinton, Mel
Dedinsky, David	Freedman, Michael	Hirako, Sharon
DeLaurier, A. Chris	Friedman, Jo	Hirsch, Robert
Demarco, Darcy	Fuller, Susan	Hoadley, Janna
Dennison, Melissa	Furnya, Lyn	Hodgson, Patricia
Dibello-Hitta, Erica	Gabara, Stanley	Hoffman, Connie
Dickerhoff, Wendy	Gaetzman, Anna	Holley, John
Dickey, Wayne	Gailband, Charles	Hope, Charles
Dodero, Mark	Galang, Daphne	Horn, Ph.D. Michael H.
Domingo, Maricar	Gallegan, Andrea	Huffman, Patricia
Donnelley, John	Gallo, Paul	Hughes, Howard
Donovan, Christine	Galvaw, Natalie	Hugill, William
Dorr, Bill	Ganster, Dr. Paul	Ikegaya, Yaz
Dougherty, Cher	Gates, James	Inman, Sheila
Dowell, Jeff	Gaylord, Tom	Inzunza, Gilbert
Draper, Sandra	Ghio, Richard	Isaacs, Pamela
Driscoll III, J. Gerald	Gilgun, Lynda	Jackson, Wanda
Driscoll, Joyce	Gill, Betsy	Jacoby, JoEllen
Driscoll, Thomas	Ginter, Kyle & Joann	Javor, Barbara
Dua, Arti	Gledhill, Fred	Jenicks, Clinton
Dudley, Joan	Godshalk, Ted & Margaret	Jeter, Vicky
Dudley, Marilyn	Goethe, Wayne	Jimenez, Lupita
Dumka, Gabrielle & Will	Goldman, Gayle	Johnson, Deborah
Durazo, Laura	Gomez, David	Johnson, Elizabeth
Eastman, Joel	Good, Deborah	Johnson, William
Edwards, Claude	Goodrich, Roberta	Johnston, Jan
Edwards, Willard	Gormican, Sue	Jones, Marilyn
Ehrlich, Shara	Grace, Don	Josephson, Gary
Eichenlaub Jr., Carl	Griffith, Theodore	Jungman, Bob
Ekker, Tracey	Guerry, Melyssa	Kaupp, Stephanie
Ellis, Joseph M.	Guilmette, Judy	Kay, Isabelle
Emerson, Lawrence	Gutierrz, Allison	Kellogg, Elizabeth
Engebretson, Pam	Haas, Jeremy	Kelly, James
Esparza, Fred	Hakes, William & Joanne	Kelpin, Paul
Eva, Tania	Hall, Frances	Ketchum, R. Kevin
Evans, Joyce	Hallman, Lynn	Kilpatrick, R.
Evans, Michael U.	Hanna, Gail	Klein, Michael
Fagan, Kathleen	Hanson, Bruce	Klovstad, Ann
Farrington, Kurt & Jacki	Harmon, Wayne	Knight, Debarah
Fat, Thomas	Harshberger, Linda	Knight, John
Field, Marilyn	Harvey, Kent	Koehler, Terry
Fiore, David	Hatfield, Al	Kraft, Mark & Vicki
Fisetton, Michael	Hemmingsen, Barbara	Kravitz, Ed
Fisher, Dr. Robert	Henderson, Teresa	Kriet, Paul & Shirley

Kuck, Beverly	Mcabee, Allen	Opdycke, Jeff
Kuger, Christine	McClelland, David	Opel, Don
Lacy, Gordon & Ruth	McColl, Anne	O'Rourke, Ruth
Lalas, John	McCoy, Mike	Ortiz, Luzette
Lamb, David	McDonald, Robert	Osterberg, Brian
Landess, Stan	McIntosh, Judy	Owen, Wayne
Lara, Joe	McKirnan, Dan	Palencia, Raejean
Law, Mony	McMaster, Tim	Palomino, Luz
Ledinsky, David	Meade, Jane & Pike	Panos, Harry
Lehnert, Pat	Mendez, Tanya	Pappas, Tammy
Leising, Adam	Merkel, Keith	Paris, Heidi
Lelie, Herman & David	Michitzie, Rita	Parker, Holly
Lemmo, John	Miller, Jr. James	Parr, Terry
Leonardini, T. & K.	Mock, Dr. Patrick	Parystone, Stevan
Leslie, Eric	Moe, Dami	Patel, Hemant
Leslie, Gilda & James	Moe, Frank & Rhonda	Patton, Robert
Levin, Dr. Lisa	Molino, M & Elena	Pentis, Al & Mary Anne
Lindquist, Mike	Molloy, Marie	Pepper, David
Lineham, Marsha & Bob	Monroe, Dana	Perez, Rocio
Lissner, Andrew	Monroe, Phil	Perez, Alberto
Littleton, Phyllis	Monsees, Edith Helen	Peters, Clarke
Lockhart, Sharon	Moon, Owen	Petitt, Terrance
Loftin, Martin	Moore, Dorean & Donald	Pettit, Josephine
Logsdon, William	Morgan, Jack	Peugh, Allen
Lorenzen, Fred	Morris, Paul	Peugh, Jim & Barbara
Loustalet, George	Moscowski, Steven	Phillips, Mike
Lowery, Tony	Mosher, Mary	Phipps, Louise
Lubach, C.	Moss, Marsha & Bob L.	Piagentini, Dario
Lynch, Reve	Movido, Jennifer	Picha, Lennis
Lyons, Mik	Moya, Maria	Pickey, Wayne
Maas, Phyllis	Mueller, Antoinette	Pierce, Nuri
Macias, Luis	Muir, Marquerite	Pierpoint, William
Mack, Callie	Mulligan, Jill	Plant, Edward
Maffei, Wes	Munguia, Leticia	Player, Shannon
Malley, Tom	Munoz, Olivia	Potter, Cathy
Mandel, Mark	Mutnick, Amanda Holley	Powers, Carolyn
Mangan, Michele	Navarette, Henry	Price, Megan
Mangum, Stephen	Neilsen, Tom	Pryde, Dr. Philip
Marogy, Danny	Nelson, Harry	Puentes, Cesar
Marquez, Viviane	Nelson, Larry & Gail	Pulver, Sarita
Martel, Lynn	Nemo, William	Purnell, Lorraine
Martinez, Claudia	Nerz, Mathew	Quick, Terri
Martinez, Manuel	Nicholas, Peter	Radinovsky, Syd/Kathy
Martinez, Melanie	Nichols, Jean	Ramirez, Elias
Matticola, Phil	Nichols, Wallace	Ramshursa, Jimmy
Matto, Elizabeth	Nielsen, Thomas	Ratigan, Dr. Diane
Maudsley, Clare H.	Norberg, Robert	Rees, Jim
Mautino, John	Nordby, Chris	Reynolds, Nick & Leslie
Mazur, Zeke	North, Susan	Rheaume, Christine
Mazzola, Mary Ellen	Nunez, Antonio	Richard, Lucille
Mazzoni, Joe	Odermatt, Mary	Rippel, Tasi

Robby, Lister	Silliman, Ann	Turner, Brian
Roberts, Bes	Simmons, Skeet	Uybungco, Ginny
Roberts, Gail	Simpson, Victoria	Van Inwegen, Earl
Robertson, Keith	Slahuddin, A. & N.	Vaught, Brent
Robertson, Kenneth	Sloane, Florence	Verbanal, Steve
Robey, Steve	Smith, David	Verdugo, Carmen
Rocha, Rebecca	Smith, Gene	Victoria, Lorena
Rodriguez, Eliz./Rosa	Smith, Rodney	Vitalich, Nicholas
Rodriguez, Sandra	Smith, Susan	Vlassoff, Lt.
Roe, Bill and Laura	Smith, Teri	Vonnordheim, Randy
Rogers, William	Smothers, Ph.D. D'erdra	Wadham, Robert/Cecile
Rolfe, Allison	Solis, Rolando & Linda	Wages, Kent
Romero, Connie	Somers, Don	Wagner, Pat
Roppe, Bea	Somerville, Jan	Waldrop, Kathy
Rosser, Anne	Spencer, Ms. Glen	Wall, Ariadna
Roullard, Phil	Sproul, Fred	Walters, Courtney
Rowe, Reid	Stand, Todd	Wasserman, Amalia
Ryan, Jon	Stanton, Linda	Watry, Peter
Ryno, Marian	Stearns, Myra	Watson, Becky
Sackett, Richard	Steinhoff, Gean	Webb, Keith
Sanchez, Frank	Stevens, Janet	Weinberg, Jon
Sandoval, Rafael Bahena	Steward, Dan	Welch, Shirley
Sands, Jim	Stewart, Gail	West, Carl
Sannicolas, Mecaila	Stewart, Lorin	Widmann, Sabina
Sansone, Larry	Stickel, Tracy	Wilks Iii, John E.
Santos, Ramon	Stinson, Margie	Willet, John
Sarmiento, Mary & Steve	Strickland, Carl	Williams, Georgetta
Sarvis, Laura	Swanson Jr., Robert	Wilson, Deborah
Sau, Luis	Sweeney, Marjorie	Wilson, Lee
Scheid, Betty J	Swift, Mitzi	Winter, Mayda
Scheidt, Vince	Sylvester-Gallo, Alice	Wolf, Joy
Schmersal, Walter	Syrjala, Edward S.	Wolf, Shaura
Schmidt, Brigitte	Taliaferro, Frank	Wollitz, Bruce
Schneider, Carrie	Tange, Lora	Wu, Julian
Schroeter, Steve	Tapia, Esther	Ymzon, Randy
Schulenberg, Judy	Taubbitiz, Fredericka	Yoder, Inez
Schulman, Melvyn	Taylor, Donald	Young, Arnold
Scott, Doug	Taylor, Harriet	Young, Herb
Scruggs, Jennifer	Terrazas, Octavio	Young, R. & G.
Seay, David"	Terrones, Victor	Youngberg, Martha
Severns, Ken	Thomas, Teresa	Zamisch, Art & Jan
Shaw, Marlene & Walter	Thorbjarnarson, Kathryn	Zanoni, Richard
Shenk, Art	Tierney, Ryan	Zeljecnjak, Marilyn
Shepard, Joyce	Tindall, Russell	Zembal, Dick
Sherman, Craig	Tirado, Victor	Zetwo, Michelle
Sherman, Fred	Torbett, Glenn	Ziegler, Dean
Shirely, Ellen	Torres, Roy	Zitlally, Reta
Shively, Sandra	Treppa, Ray	Zschesche, Peter
Sides, James	Trusty, Wendy	
Sierra, Arsenio	Tunstall, Bill	

Local Libraries

Chula Vista Public Libraries
 Civic Center Branch
 South Chula Vista Branch
Coronado Public Library
Imperial Beach Library
National City Library
City of San Diego Public Libraries
 Central Library, Gary Klockenga, Government Publications Librarian
 Logan Heights Branch Library
 Otay Mesa Branch Library
 Paradise Hills Branch Library

Organizations

American Tunaboat Association	Glorietta Bay Marina
Animal Protection Institute (C. Papouchis)	Habitat Mitigation Committee
Aqua Adventures, Kayak Center	Hornblower Dining Yachts
ATSF Railway	Horned Lizard Conservation Society
Buena Vista Audubon	Imperial Beach Chamber of Commerce
Burlington Northern Santa Fe	Kelco Company
Cabrillo Isle Marina LLC	La Playa Yacht Club
California Native Plant Society	League for Coastal Protection
California Waterfowl Association	Luce, Forward, Hamilton, & Scripps
California Yacht Marina	Manchester Resorts LP
Camp Surf	Mariner's Point
Center for Biological Diversity	Maritime Museum Association of San Diego
Center for Conservation Strategies	Mission Bay Paddle Sports
Charles Company	National Audubon Society
Chula Vista Chamber of Commerce	National City Chamber of Commerce
Chula Vista Nature Center	National Fish and Wildlife Foundation
Citizens Coordinate for Century 3	National Wildlife Federation, Western Natural
Congressional Sportsmen's Foundation	Resources Center
Conservation Biology Institute	National Wildlife Refuge Association
Cooperative Alliance for Refuge Enhancement	Navy Sailing Center
Coronado Cays Home Owners Association	Ocean Research International
Coronado Chamber of Commerce	Otay Mesa/Nestor Planning Group
Crest/Dehesa/Harbison Canyon	Otay Valley Regional Park Committee
Crossroads II	Outboard Boating Club of San Diego
Defenders of Wildlife	Pacific Bell
Downtown San Diego Partnership	Palomar Audubon
Ducks Unlimited Inc.	Point Reyes Bird Observatory
Duke Energy North America	Port Coronado Association
Eagle Survey Project	Procopio, Cary, Hargreaves, & Savitch
Endangered Habitats League	San Diego Archaeological Society
Environmental Health Coalition	San Diego Association of Realtors
Environmental Advocates	San Diego Association of Yacht Clubs
Environmental Committee of Tijuana - S.D. Region	San Diego Audubon Society
Environmental Warriors	San Diego Bay Committee
Fiddler's Cove Marina	San Diego Baykeeper
Friends of South Bay Wildlife	San Diego Chamber of Commerce
	San Diego Council of Divers, Inc.

San Diego County Farm Bureau
San Diego County Fish and Game Association
San Diego County Fish and Wildlife Advisory
Commission
San Diego Harbor Excursion
San Diego Herp Society
San Diego Jet Sports Club
San Diego League of Women Voters
San Diego Natural History Museum
San Diego Oceans Foundation
San Diego Personal Watercraft Association
San Diego Railway Partnership
San Diego River Park Foundation
San Diego Yacht Club
Save Our Bay Inc.
SDG&E, Public Affairs
Sheppard, Mullin, Richter, & Hampton LLP
Sierra Club, San Diego Chapter

South Bay Area Focus Team
South Bay Boat Yard
South Bay Salt Works
Southwestern Wetlands Interpretive
Association
Southwestern College Sailing
Southwestern Yacht Club
Sportfishing Association of California
Surfrider Foundation, San Diego Chapter
Sweetwater Planning Group
The Nature Conservancy
The Wilderness Society
TRVEA
United Sportsfishers of San Diego
WHSRN Manomet Center for Conservation
Sciences
Wild Coast
Wildlife Management Institute

Media

Eagle Newspapers
Imperial Beach Eagle & Times
San Diego Business Journal
San Diego Daily Transcript

San Diego Log
San Diego Union-Tribune
Star News

City Governments

City of Chula Vista, Mayor and City Council
City of Chula Vista, City Manager
City of Chula Vista, Director, Community Development
City of Chula Vista, Planning Director
City of Chula Vista, Police Department
City of Chula Vista, Redevelopment Projects Manager
City of Coronado, Mayor and City Council
City of Coronado, City Manager
City of Coronado, Director of Community Development
City of Imperial Beach, Mayor and City Council
City of Imperial Beach, City Manager
City of Imperial Beach, Community Development Director
City of Imperial Beach, Public Works Director
City of Imperial Beach, Planning Department
City of National City, Mayor and City Council
City of National City, City Manager
City of National City, Community Development
City of National City, Planning Director
City of San Diego, Mayor and City Council
City of San Diego, City Manager
City of San Diego, Community Planning
City of San Diego, Engineering and Capital Projects
City of San Diego, Environmental Services
City of San Diego, Metropolitan Wastewater
City of San Diego, Multiple Species Conservation Planning
City of San Diego, Park and Recreation Department

City of San Diego, Police Department
City of San Diego, Real Estate Assets Department

County Government

San Diego County Supervisor Greg Cox
San Diego County Supervisor Dianne Jacob
San Diego County Supervisor Ron Roberts
County of San Diego, Real Property Division
County of San Diego, Environmental Health Services
County of San Diego, Parks and Recreation Department
County of San Diego, Department of Planning and Land Use
County of San Diego, Department of Public Works

Other Local Agencies

California American Water Company
Center City Development Corporation - Public Works Department
Harbor Patrol, Dave Hall, Chief of Harbor Police
International Border Water Commission
Metropolitan Transit Development Board (MTDB)
Otay Water District
San Diego County Airport Authority
San Diego Association of Governments (SANDAG)
South Bay Irrigation District
Sweetwater Authority
Tijuana Valley Company Water District
Unified Port of San Diego

California State Agencies

Cal EPA
California Coastal Commission, Executive Director, Peter Douglas
California Coastal Commission, Federal Consistency, James Raives
California Coastal Commission, San Diego Coast District
California Coastal Conservancy
California Department of Forestry
California Fish and Game Commission
California State Parks, State Historic Preservation Officer
California State Parks, Superintendent, Ronilee Clark
Caltrans, District 11
Department of Boating and Waterways, Director, Raynor T. Tsuneyoshi
Department of Conservation
Department of Fish and Game, Director, Ryan Broddrick
Department of Fish and Game, Marilyn Fluharty
Department of Fish and Game, South Coast Regional Manager, Charles Raysbrook
Resources Agency, Secretary, Mike Chrisman
San Diego Regional Water Quality Control Board, Region 9, Executive Officer, John Robertus
San Diego Regional Water Quality Control Board, Region 9, Pete Michael
State Lands Commission, Executive Officer, Paul Thayer
State Water Resources Control Board, Arthur G. Baggett Jr., Chair
Wetlands Recovery Project
Wildlife Conservation Board

Tribal Governments

Barona Band of Mission Indians
Campo Band of Mission Indians
Cuyapaipe Community of Diegueno Mission Indians
Inaja Band of Mission Indians
Jamul Indian Village
La Jolla Band of Luiseno Indians
La Posta Band of Mission Indians
Los Coyotes Reservation
Manzanita Tribe of Kumeyaay Indians
Mesa Grande Band of Indians
Pala Band of Mission Indians
Pauma Band of Mission Indians
Rincon Indian Reservation
San Pasqual Band of Indians
Santa Ysabel Indian Reservation
Sycuan Band of Indians
Viejas Reservation
Carmen Lucas
Jim Velasques
Kumeyaay Cult. Repatriation Committee
Kumeyaay Cultural Heritage Preservation
Kumeyaay Cultural Historic Committee

Federal Agencies & Offices

EIS Filing Section US Environmental Protection Agency, Office of Federal Activities
FAA - ARPT DIV AWP-600
National Interagency Fire Center
NOAA Marine Fisheries, Bob Hoffman
U.S. Army, Corps of Engineers
U.S. Border Patrol, San Diego Sector
U.S. Coast Guard, Marine Safety Office
U.S. Coast Guard, Port Operations
U.S. Department of the Interior, Office of Environmental Policy and Compliance, Phyllis Davis
U.S. Department of Transportation, Federal Highway Administration
U.S. Environmental Protection Agency, Paul Michael
U.S. Environmental Protection Agency, Region 9
U.S. Geological Survey
U.S. Navy, Naval Facilities Engineering Command
U.S. Navy, Southwest Division, NAVFAC, Natural Resources Department, Mitch Perdue
U.S. Navy, Southwest Division, NAVFAC, Natural Resources Department, Tamara Conkle
USDA, APHIS, Wildlife Services, District Supervisor, John Turman
USDA, Natural Resource Conservation District of Greater San Diego County
USFWS
Bellantoni, Liz, USFWS, Chief, Planning and Policy
Bohan, Carolyn, USFWS, National Wildlife Refuge System
Bortner, Brad, USFWS, Migratory Birds & Habitat Programs
Concannon, Julie, USFWS, Region 1, NEPA Coordinator
Drescher, Dave, USFWS, Region 1, Refuge Planning-Cartography/GIS
Fuller, Nell, USFWS, Region 1, Refuge Support, Policy
Hadley, Richard, USFWS, CNO, Assistant Refuge Supervisor
Harrison, Ben, USFWS, Region 1, Land Protection Planning

Harrison, Jean, USFWS, Region 1, Division of Visitor Services
Houghten, Chuck, USFWS, Division of Refuge Planning
Kier-Haggenjos, Kay, USFWS, Region 1, Division of Refuge Planning
Kilbride, Kevin USFWS Refuge Biology
Kolar, Marge, USFWS, Assistant Manager of Refuges
Marxen, Mike, USFWS, Region 1, Division of Refuge Planning
McAdams, Amanda, USFWS, Fire Planner
Moore, Stephen USFWS, Region 1, Refuge Operations Support
Paveglio, Fred USFWS, Refuge Biology
Pavusko, Gary, USFWS, CNO, Fire Management Officer
Pelz, Mark USFWS CA/NV Refuge Planning
Rauch, Paul, USFWS, Engineering
Raymond, Anan, USFWS, Region 1, Cultural Resources Team
Saul, Susan, USFWS, External Affairs Office
Shaffer, Robert, USFWS, Joint Venture Coordinator
Sheppard, Cathy, USFWS, Region 1, Division of Realty
Smiley, Tom, USFWS, Engineering
Sobiech, Scott USFWS, Contaminants
Speulda, Lou Ann, USFWS, Cultural Resources Branch
Thompson, Steve, USFWS, Manager
Walsworth, Dan, USFWS, Refuge Supervisor
Zimmerman, Tara, USFWS, Migratory Birds & Habitat Programs

U.S. Congress

Honorable Barbara Boxer, U.S. Senate
Honorable Dianne Feinstein, U.S. Senate
Congresswoman Susan Davis, 53th District
Congressman Bob Filner, 51th District

California State Legislature

Governor Arnold Schwarzenegger
Lieutenant Governor Cruz Bustamante
State Senator Dede Alpert, 39th District
State Assemblyman Juan Vargas, 79th District
State Assemblywoman Christine Kehoe Christine, 76th District
State Assemblywoman Shirley Horton, 78th District

Appendix C

Bird Species Lists

Appendix C: Bird Species Lists

The following lists include bird species that have been observed at least once on the specified Refuge Unit. The birds' common and scientific names are provided in accordance with the 7th edition (1998) of the A. O. U. Checklist of North American Birds. (* Indicates bird species known to nest on the refuge.)

Sweetwater Marsh Unit

<u>Common Name</u>	<u>Scientific Name</u>
Red-throated Loon	<i>Gavia stellata</i>
Pacific Loon	<i>Gavia pacifica</i>
Common Loon	<i>Gavia immer</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Horned Grebe	<i>Podiceps auritus</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Clark's Grebe	<i>Aechmophorus clarkii</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Snowy Egret	<i>Egretta thula</i>
Little Blue Heron	<i>Egretta caerulea</i>
Tricolored Heron	<i>Egretta tricolor</i>
Reddish Egret	<i>Egretta rufescens</i>
Green Heron	<i>Butorides virescens</i>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
White-faced Ibis	<i>Plegadis chihi</i>
Turkey Vulture	<i>Cathartes aura</i>
Snow Goose	<i>Chen caerulescens</i>
Ross's Goose	<i>Chen rossii</i>
Canada Goose	<i>Branta Canadensis</i>
Brant	<i>Branta bernicla</i>
Gadwall	<i>Anas strepera</i>
Eurasian Wigeon	<i>Anas penelope</i>
American Wigeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Blue-winged Teal	<i>Anas discors</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acute</i>
Green-winged Teal	<i>Anas crecca</i>
Canvasback	<i>Aythya valisineria</i>
Redhead	<i>Aythya americana</i>

Ring-necked Duck	<i>Aythya collaris</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
Surf Scoter	<i>Melanitta perspicillata</i>
White-winged Scoter	<i>Melanitta fusca</i>
Black Scoter	<i>Melanitta nigra</i>
Long-tailed Duck	<i>Clangula hyemalis</i>
Bufflehead	<i>Bucephala albeola</i>
Common Goldeneye	<i>Bucephala clangula</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Osprey	<i>Pandion haliaetus</i>
White-tailed Kite	<i>Elanus leucurus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Crested Caracara	<i>Caracara cheriway</i>
American Kestrel*	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Prairie Falcon	<i>Falco mexicanus</i>
California Quail	<i>Callipepla californica</i>
Light-footed Clapper Rail*	<i>Rallus longirostris levipes</i>
Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana Carolina</i>
Common Moorhen	<i>Gallinula chloropus</i>
American Coot	<i>Fulica americana</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
American Golden Plover	<i>Pluvialis dominica</i>
Western Snowy Plover*	<i>Charadrius alexandrinus nivosus</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Killdeer*	<i>Charadrius vociferous</i>
Mountain Plover	<i>Charadrius montanus</i>
Black-necked Stilt	<i>Himantopus mexicanus</i>
American Avocet	<i>Recurvirostra americana</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Whimbrel	<i>Numenius phaeopus</i>
Long-billed Curlew	<i>Numenius americanus</i>
Marbled Godwit	<i>Limosa fedoa</i>

Ruddy Turnstone	<i>Arenaria interpres</i>
Black Turnstone	<i>Arenaria melanocephala</i>
Surfbird	<i>Aphriza virgata</i>
Red Knot	<i>Calidris canutus</i>
Sanderling	<i>Calidris alba</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
Dunlin	<i>Calidris alpina</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Ruff	<i>Philomachus pugnax</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Common Snipe	<i>Gallinago gallinago</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>
Parasitic Jaeger	<i>Stercorarius parasiticus</i>
Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Heermann's Gull	<i>Larus heermanni</i>
Mew Gull	<i>Larus canus</i>
Ring-billed Gull	<i>Larus delawarensis</i>
California Gull	<i>Larus californicus</i>
Herring Gull	<i>Larus argentatus</i>
Thayer's Gull	<i>Larus thayeri</i>
Western Gull	<i>Larus occidentalis</i>
Glaucous-winged Gull	<i>Larus glaucescens</i>
Gull-billed Tern	<i>Sterna nilotica</i>
Caspian Tern	<i>Sterna caspia</i>
Royal Tern	<i>Sterna maxima</i>
Elegant Tern	<i>Sterna elegans</i>
Forster's Tern*	<i>Sterna forsteri</i>
California Least Tern*	<i>Sterna antillarum browni</i>
Black Skimmer	<i>Rynchops niger</i>
Rock Dove	<i>Columba livia</i>
Mourning Dove*	<i>Zenaida macroura</i>
Greater Roadrunner	<i>Geococcyx californianus</i>
Barn Owl	<i>Tyto alba</i>
Great Horned Owl	<i>Bubo virginianus</i>
Burrowing Owl*	<i>Athene cunicularia</i>
Short-eared Owl	<i>Asio flammeus</i>
Lesser Nighthawk	<i>Chordeiles acutipennis</i>
Common Nighthawk	<i>Chordeiles minor</i>
Vaux's Swift	<i>Chaetura vauxi</i>
White-throated Swift	<i>Aeronautes saxatalis</i>
Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Anna's Hummingbird*	<i>Calypte anna</i>
Costa's Hummingbird*	<i>Calypte costae</i>
Rufous Hummingbird	<i>Selasphorus rufus</i>
Allen's Hummingbird	<i>Selasphorus sasin</i>
Belted Kingfisher	<i>Ceryle alcyon</i>

Northern Flicker	<i>Colaptes auratus</i>
Western Wood-Pewee	<i>Contopus sordidulus</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>
Black Phoebe	<i>Sayornis nigricans</i>
Say's Phoebe	<i>Sayornis saya</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Cassin's Kingbird	<i>Tyrannus vociferans</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Loggerhead Shrike*	<i>Lanius ludovicianus</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Warbling Vireo	<i>Vireo gilvus</i>
Western Scrub Jay	<i>Aphelocoma californica</i>
American Crow	<i>Corvus brachyrhynchos</i>
Common Raven	<i>Corvus corax</i>
Magpie Jay	<i>Calocitta formosa</i>
Horned Lark*	<i>Eremophila alpestris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Barn Swallow	<i>Hirundo rustica</i>
Bushtit*	<i>Psaltriparus minimus</i>
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>
Bewick's Wren*	<i>Thryomanes bewickii</i>
House Wren	<i>Troglodytes aedon</i>
Marsh Wren	<i>Cistothorus palustris</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
California Gnatcatcher	<i>Polioptila californica</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Hermit Thrush	<i>Catharus guttatus</i>
American Robin	<i>Turdus migratorius</i>
Wrentit	<i>Chamaea fasciata</i>
Northern Mockingbird*	<i>Mimus polyglottos</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>
California Thrasher	<i>Toxostoma redivivum</i>
European Starling*	<i>Sturnus vulgaris</i>
Red-throated Pipit	<i>Anthus cervinus</i>
American Pipit	<i>Anthus rubescens</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Phainopepla	<i>Phainopepla nitens</i>
Orange-crowned Warbler	<i>Vermivora celata</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Yellow Warbler	<i>Dendroica petechia</i>
Magnolia Warbler	<i>Dendroica magnolia</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>
MacGillivray's Warbler	<i>Oporornis tolmiei</i>
Common Yellowthroat	<i>Geothlypis trichas</i>

Wilson's Warbler	<i>Wilsonia pusilla</i>
Western Tanager	<i>Piranga ludoviciana</i>
Green-tailed Towhee	<i>Pipilo chlorurus</i>
Spotted Towhee	<i>Pipilo maculatus</i>
California Towhee	<i>Pipilo crissalis</i>
Vesper Sparrow	<i>Poocetes gramineus</i>
Lark Bunting	<i>Calamospiza melanocorys</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Belding's Savannah Sparrow*	<i>Passerculus sandwichensis beldingi</i>
Large-billed Savannah Sparrow	<i>Passerculus sandwichensis rostratus</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>
Song Sparrow*	<i>Melospiza melodia</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
White-crowned Sparrow*	<i>Zonotrichia leucophrys</i>
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Blue Grosbeak	<i>Guiraca caerulea</i>
Lazuli Bunting	<i>Passerina amoena</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Tricolored Blackbird	<i>Agelaius tricolor</i>
Western Meadowlark*	<i>Sturnella neglecta</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Hooded Oriole	<i>Icterus cucullatus</i>
Bullock's Oriole	<i>Icterus bullockii</i>
House Finch*	<i>Carpodacus mexicanus</i>
Lesser Goldfinch	<i>Carduelis psaltria</i>
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>
American Goldfinch	<i>Carduelis tristis</i>
House Sparrow*	<i>Passerculus domesticus</i>

(Source: Chula Vista Nature Center 1998 and Merkel & Associates, Inc. 2000b)

South San Diego Bay Unit

<u>Common Name</u>	<u>Scientific Name</u>
Red-throated Loon	<i>Gavia stellata</i>
Common Loon	<i>Gavia immer</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Horned Grebe	<i>Podiceps auritus</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Clark's Grebe	<i>Aechmophorus clarkii</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Double-crested Cormorant*	<i>Phalacrocorax auritus</i>

Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Snowy Egret	<i>Egretta thula</i>
Little Blue Heron	<i>Egretta caerulea</i>
Tricolored Heron	<i>Egretta tricolor</i>
Reddish Egret	<i>Egretta rufescens</i>
Green Heron	<i>Butorides virescens</i>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
White-faced Ibis	<i>Plegadis chihi</i>
Snow Goose	<i>Chen caerulescens</i>
Brant	<i>Branta bernicla</i>
Gadwall*	<i>Anas strepera</i>
American Wigeon	<i>Anas americana</i>
Mallard*	<i>Anas platyrhynchos</i>
Blue-winged Teal	<i>Anas discors</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acute</i>
Green-winged Teal	<i>Anas crecca</i>
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
Surf Scoter	<i>Melanitta perspicillata</i>
Long-tailed Duck	<i>Clangula hyemalis</i>
Bufflehead	<i>Bucephala albeola</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Osprey	<i>Pandion haliaetus</i>
White-tailed Kite	<i>Elanus leucurus</i>
Northern Harrier	<i>Circus cyaneus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
American Kestrel	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Light-footed Clapper Rail*	<i>Rallus longirostris levipes</i>
American Coot	<i>Fulica americana</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
American Golden Plover	<i>Pluvialis dominica</i>
Western Snowy Plover*	<i>Charadrius alexandrinus nivosus</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Killdeer*	<i>Charadrius vociferus</i>
Black-necked Stilt*	<i>Himantopus mexicanus</i>
American Avocet*	<i>Recurvirostra americana</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Willet	<i>Catoptrophorus semipalmatus</i>

Spotted Sandpiper	<i>Actitis macularia</i>
Whimbrel	<i>Numenius phaeopus</i>
Long-billed Curlew	<i>Numenius americanus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Ruddy Turnstone	<i>Arenaria interpres</i>
Black Turnstone	<i>Arenaria melanocephala</i>
Surfbird	<i>Aphriza virgata</i>
Red Knot	<i>Calidris canutus</i>
Sanderling	<i>Calidris alba</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Dunlin	<i>Calidris alpina</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>
Red Phalarope	<i>Phalaropus fulicaria</i>
Parasitic Jaeger	<i>Stercorarius parasiticus</i>
Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Heermann's Gull	<i>Larus heermanni</i>
Mew Gull	<i>Larus canus</i>
Ring-billed Gull	<i>Larus delawarensis</i>
California Gull	<i>Larus californicus</i>
Herring Gull	<i>Larus argentatus</i>
Western Gull*	<i>Larus occidentalis</i>
Glaucous-winged Gull	<i>Larus glaucescens</i>
Gull-billed Tern*	<i>Sterna nilotica</i>
Caspian Tern*	<i>Sterna caspia</i>
Royal Tern*	<i>Sterna maxima</i>
Elegant Tern*	<i>Sterna elegans</i>
Common Tern	<i>Sterna hirundo</i>
Forster's Tern*	<i>Sterna forsteri</i>
California Least Tern*	<i>Sterna antillarum browni</i>
Black Tern	<i>Chlidonias niger</i>
Black Skimmer*	<i>Rynchops niger</i>
Rock Dove	<i>Columba livia</i>
Mourning Dove	<i>Zenaida macroura</i>
Greater Roadrunner	<i>Geococcyx californianus</i>
Barn Owl	<i>Tyto alba</i>
Burrowing Owl	<i>Athene cunicularia</i>
Short-eared Owl	<i>Asio flammeus</i>
Anna's Hummingbird	<i>Calypte anna</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Black Phoebe	<i>Sayornis nigricans</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
American Crow	<i>Corvus brachyrhynchos</i>
Common Raven	<i>Corvus corax</i>

Horned Lark*	<i>Eremophila alpestris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Barn Swallow	<i>Hirundo rustica</i>
Bushtit	<i>Psaltriparus minimus</i>
Marsh Wren	<i>Cistothorus palustris</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
European Starling	<i>Sturnus vulgaris</i>
American Pipit	<i>Anthus rubescens</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
California Towhee	<i>Pipilo crissalis</i>
Belding's Savannah Sparrow*	<i>Passerculus sandwichensis beldingi</i>
Song Sparrow	<i>Zonotrichia leucophrys</i>
Blue Grosbeak	<i>Guiraca caerulea</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Hooded Oriole	<i>Icterus cucullatus</i>
House Finch	<i>Carpodacus mexicanus</i>
Lesser Goldfinch	<i>Carduelis psaltria</i>
House Sparrow	<i>Passer domesticus</i>

(Source: City of San Diego 1987, USFWS 1994, US Navy 2000, Tierra Environmental Services 2001, and Tony Stands, pers. comm., April 2004)

Appendix D

CCP Implementation

Appendix D: CCP Implementation

Introduction

Following public review and comment on the draft CCP/EIS, a final CCP and final EIS will be prepared. This appendix combined with Chapters 1 and 3 and portions of Chapter 2 of the draft CCP/EIS, as revised to address public comments, will form the basis for the Final Comprehensive Conservation Plan for the Sweetwater Marsh and South San Diego Bay Units of the San Diego Bay National Wildlife Refuge (NWR). Implementation of the CCP will begin following the approval of the Final EIS and the issuance of the Record of Decision, which includes the identification of the proposed action.

During the 15 years following CCP approval, the CCP will serve as the primary reference document for all Refuge planning, operations, and management until it is formerly revised at the end of this period. The objectives and strategies developed for the CCP provide direction for achieving the Refuge vision and goals. Although it is our intent to implement the proposed strategies (projects) by the established deadlines, the timing of implementation is contingent upon a variety of factors, including funding, staffing, compliance with Federal regulations, partnerships, and the results of monitoring and evaluation.

The Service will implement the final CCP with assistance from new and existing partners, including public agencies, non-governmental organizations, and the public. Consistent public outreach and continued coordination with Refuge constituents are essential components of the CCP implementation process. Some of the partnership opportunities to be explored during the 15-year life of this CCP are described below, as are the projects, monitoring responsibilities, and staffing and funding requirements needed to successfully implement the CCP.

Wildlife and Habitat Management Implementation

Management priorities have been established to meet the goals and objectives outlined in the CCP. These priorities are driven by the Service's trust responsibilities (i.e., endangered and threatened species, migratory birds), the mission of the Refuge system, Refuge purposes, and the desires of the public. The best science available will be used to measure success or failure in achieving the goals and objectives developed for each Refuge Unit.

Past management on these Refuge Units has been focused on maintaining appropriate nesting habitat for seabirds, implementing predator control to protect listed species, and minimizing disturbance to resident and migratory bird populations. While these management practices would continue or be expanded (e.g., nesting substrate enhancement and nesting area expansion projects), additional management actions would be implemented as funding permits. A greater focus would be placed on the inventory and monitoring of the various species and habitats supported on the Refuge. As described below, considerable emphasis would be placed on habitat enhancement and restoration to benefit native wildlife and plant species.

Habitat Enhancement and Restoration Implementation

Various enhancement and restoration projects are described in the CCP that once implemented would expand and/or improve the overall habitat value of this Refuge for a variety of species. Some projects would involve minimal effort such as removing or lowering the weir near Paradise Marsh, while restoration of the salt ponds in the South San Diego Bay Unit would require

coordination with a variety of partners to obtain permits and funding. Full restoration of the structure and function of the coastal wetland habitats proposed within the CCP particularly for the South San Diego Bay Unit may not be achieved within the 15-year life of this plan, however, the direction provided in the CCP will ensure that significant strides towards the goal of providing fully functional, high value habitat for migratory birds and listed species such as the endangered light-footed clapper rail will be achieved.

Public Use Implementation

Various projects are included in the CCP that are intended to provide opportunities for increasing public awareness of the significance of the habitats and species protected within the Refuge, while also providing different ways for the public to experience these resources. The CCP emphasizes the importance of expanding opportunities for wildlife observation and environmental interpretation on both Refuge Units. In addition, the outstanding environmental education programs that are already being implemented on both Refuge Units would continue. Partners will be sought to expand the availability of these programs to more children throughout the region, while also expanding the depth of the programs to address the needs of older students. Other opportunities for public outreach would also be realized by continuing to permit fishing and boating within the South San Diego Bay Unit.

Partnership Opportunities

Long before the establishment of these Refuge Units, there was strong public interest in the protection, management, and stewardship of the habitats now preserved within the Refuge. Following Refuge establishment, this public interest led to the formation of a wide variety of public/private and interagency partnerships. Some of these partnerships have focused on developing regionally significant environmental education programs, while others have focused on managing, monitoring, and conserving Refuge habitats and species. The proximity of the Refuge to urban development and the international border with Mexico, along with the designation of the Refuge as globally significant habitat, has and will continue to result in the development of unique and innovative partnerships with the local community and local, state, national, and international agencies and organizations.

Existing partnerships such as those between the Service and the Chula Vista Nature Center, San Diego Zoological Society, SeaWorld, SWIA, and many others will be strengthened and new partnerships will continue to be nurtured. New and existing partnerships will expand community support for the Refuge, increase stewardship of Refuge resources, and provide greater benefits to wildlife resources and the public than would be achievable within the Refuge's annual budgets.

Partnerships will be particularly important in obtaining funding to implement proposed habitat enhancement and restoration projects. More details regarding these types of partnerships are presented under the project funding and staffing discussion.

Monitoring

Monitoring the effects of management actions on the Refuge's trust resources is an important component of the CCP, as is the documentation of the Refuge's baseline conditions. By completing baseline inventories and monitoring specific management actions, Refuge staff can better understand the species, habitats, and physical processes that occur on the Refuge and the ecological interactions that occur between species.

Monitoring is an ongoing management activity at both the Sweetwater Marsh and South San Diego Bay Units and will continue per available funding. Past monitoring efforts have focused primarily on California least tern and western snowy plover nesting, although monitoring of other colonial nesting birds, including the gull-billed tern, is also implemented at the South San Diego Bay Unit. While these monitoring efforts are adequate to identify trends in abundance, diversity, and nesting success of breeding seabirds and nesting attempts and success of snowy plovers, this monitoring does not provide an understanding of the entire Refuge landscape. Ideally, a Refuge monitoring program would occur across several levels of biological organization including genetic, population/species, community/ecosystem, and regional landscape. However, monitoring programs are generally focused on selected components that are representative of many other species or habitats due to funding limitations.

Monitoring is identified as a strategy in the CCP for managing the marsh complex on the Sweetwater Marsh Unit and as an integral component of salt pond restoration on the South San Diego Bay Unit. Monitoring will focus on measuring the success of CCP implementation, particularly the effectiveness of the various habitat enhancement and restoration strategies in achieving plan objectives. The objectives provided for each Refuge Unit are presented in Sections 2.2.5 and 2.3.5 of Chapter 2.

Specific monitoring activities associated with proposed restoration of the Otay River floodplain and the salt ponds in the South San Diego Bay Unit are described in Chapters 2 and 4 and include: monitoring the establishment of vegetation and invertebrates within restored intertidal wetlands; monitoring seabird nesting activity on the salt pond levees following pond restoration, and initial monitoring of the managed pond areas to ensure appropriate salinity levels are maintained. The data obtained during such monitoring will provide information necessary to confirm that the objectives of the various management actions are being achieved or that changes through adaptive management would be necessary to achieve desired habitat objectives.

Adaptive management is a flexible approach to long-term management that is directed by the results of ongoing monitoring activities and new data. Restoring the salt ponds in a phased approach will management techniques, objectives, and strategies to be monitored and evaluated. Future management can then be modified as needed, based on the results of this evaluation or other relevant information that becomes available. These modifications would be made to better achieve the Refuge's goals and objectives.

Projects

Provided in Table D-1 is a listing of the prioritized projects proposed for each Refuge Unit. Following completion of the CCP, those projects included in the alternative identified in the Record of Decision as the selected alternative will be proposed for inclusion in the Refuge Operating Needs System (RONS). Brief project descriptions and their associated costs are provided.

Table D-1 – PROJECTS: REFUGE OPERATING NEEDS (RONS) LIST

	Operating Costs (in thousands)			
	FTEs	One-Time	Recurring Base	Total 1 st Year
High Priority Projects for the Sweetwater Marsh NWR				
Enhance circulation in Sweetwater Marsh/Paradise Marsh: Remove old fill areas, construct a new culvert, and remove/lower a weir to enhance tidal circulation over 130 acres of marsh habitat to benefit the light-footed clapper rail, salt marsh bird’s beak, and other migratory birds.	-	\$200	\$0.5	\$200
Improve marsh management: A Biology Technician will assist the Wildlife Biologist in developing and implementing a Habitat Management Plan that includes actions to improve and protect marsh quality including completion of an inventory of marsh species and mapping of special status species distribution/population size; improving conditions in upland transition areas to benefit salt marsh bird’s beak propagation; increasing control of invasive plants; and performing annual monitoring and maintenance activities.	1	\$25	\$45.5	\$70.5
Reduce human disturbance within the marsh: An Outdoor Recreation Planner will assist in developing a public outreach program directed at reducing unauthorized access into sensitive Refuge habitats and implement the program in partnership with other agencies and organizations; create and install improved signage, and increase visits by law enforcement and Refuge staff into areas most often affected by disturbance to reduce direct and indirect impacts to Refuge trust resources.	.5	\$10	\$28	\$33
Increase tern and plover nesting and improve nesting success: A maintenance worker will assist in enhancing/maintaining about 30 acres at the D Street Fill. A 6- to 8-inch cap of clean, light-color sand will be added to a portion of the site and the slope along the southern edge of the fill will be recontoured to improve plover chick access to the tide line. Predator management and annual monitoring will continue to ensure increased reproductive success and regular use by nesting least terns and snowy plovers.	1	\$50	\$75	\$125
Improve opportunities for wildlife observation and environmental interpretation: An Outdoor Recreation Planner would design and implement an environmental interpretation plan for the Refuge Unit to provide a redesigned trail system to improve opportunities for wildlife observation, and design and install new interpretive elements to better coordinate interpretation with the existing environmental education programs conducted in partnership with the Chula Vista Nature Center and others.	1	\$120	\$28	\$143
Develop and implement a Cultural Resource Management Plan: Develop and implement a cultural resource management program that insures adequate consultation, identification, evaluation, and protection of the Refuge’s cultural resources and encourages the interpretation of these resources as part of the overall interpretive program for the Refuge Unit.	-	\$10	\$1	\$10
Address contaminants issues affecting the Refuge: An Environmental Contaminants Specialist will develop and implement a baseline sampling plan based on the recommendations included in the CAP and begin remediation of contaminates by addressing the appropriate treatment of buried polyethylene sheeting on Gunpowder Point.	.5	\$100	\$45	\$145

Medium Priority Projects for the Sweetwater Marsh NWR	Operating Costs (in thousands)			
	FTEs	One-Time	Recurring Base	Total 1st Year
<p>Restore intertidal wetlands: After 2010, when the existing mitigation leasehold overlays expire, restore up to 20 acres of intertidal wetlands, of which a minimum of ten acres would be restored to cordgrass-dominated salt marsh habitat. The actual areas available for restoration would be dependent upon how much restoration is implemented on the mitigation leasehold overlays prior to 2010. Potential restoration areas include approximately 13 acres at the eastern end of the D Street Fill, six acres at the F&G Street Marsh, and two acres along the northern edge of Gunpowder Point.</p>	-	\$2,000	\$5	\$2,000
<p>Improve tidal circulation at the southern tip of Sweetwater Marsh: Conduct a hydrologic study to analyze the benefits of removing the berm located between the bay and the southern tip of Sweetwater Marsh, and if benefits to tidal circulation and habitat quality would be realized, prepare and implement engineering plans for removing or breaching the berm.</p>	-	\$500	\$1	\$500
<p>Restore native upland and upland transition habitat: After 2010, when the existing mitigation leasehold overlays expire, restore approximately 25 acres on Gunpowder Point to native upland vegetation and restore the native plant species historically found in the wetland-upland transition areas throughout the Refuge Unit. This project would involve the initial removal and long-term control of invasive, non-native species, planting and seeding of native shrubs and annual vegetation, initial monitoring of restoration success, and long-term maintenance and monitoring of the restored habitat.</p>	-	\$300	\$5	\$300
<p>Improve volunteer services: Improve and expand volunteer services with a volunteer coordinator. Obtain basic supplies, equipment, and uniforms to support the volunteers. Volunteers will support existing and expanded proposals for environmental education and interpretation and assist in accomplishing other projects related to habitat management (e.g., wildlife and plant surveys and invasive species control) and special events.</p>	1	\$30.4	\$1	\$1
<p>Increase participation in existing environmental education programs: Renew existing partnerships and identify new partners to assist in expanding current outreach programs to better serve underrepresented and underserved communities.</p>	-	\$10	\$3	\$10

High Priority Projects for the South San Diego Bay Unit	Operating Costs (in thousands)			
	FTEs	One-Time	Recurring Base	Total 1st Year
<p>Increase the availability of high quality nesting habitat within the salt works: Create a minimum of 33-acres of new nesting habitat within the salt works by filling pond corners, creating “island” type fills within the ponds, widening some levees, recontouring some levee side slopes, and capping all nesting areas with appropriate depths of clean, light sand to benefit the California least tern and a variety of colonial nesting seabirds. A Biological Technician will assist in monitoring during and after construction and a Maintenance Worker will assist with the maintenance of the nesting habitat.</p>	1	\$2,500	\$47.5	\$1,550
<p>Improve nesting habitat for plovers: Seasonally regulate (via a pump) the water level in Pond 20 to provide a minimum of 20 acres of dry salt flats to support nesting by the endangered western snowy plovers.</p>	-	\$5	\$2	\$5
<p>Develop and implement a Cultural Resource Management Plan: Develop and implement a cultural resource management program that insures adequate consultation, identification, evaluation, and protection of the Refuge’s cultural resources and encourages the interpretation of these resources as part of the overall interpretive program for the Refuge Unit.</p>	-	\$20	\$2	\$20
<p>Restore native wetland and upland habitat in the Otay River floodplain: With assistance from a Restoration Ecologist, develop final restoration plans and implement grading to restore approximately 145 acres of disturbed habitat in the Otay River floodplain, creating freshwater wetland, coastal salt marsh, and native scrub habitats to benefit endangered species, migratory birds, and other Refuge resources.</p>	1	\$5,000	\$48	\$5,048
<p>Restore the western salt ponds to tidal action: Recontour the bottom of the ponds to achieve appropriate elevations to support desired habitat types and breach the pond levees to restore 200 acres within the salt works to tidal influence and facilitate the development of cordgrass-dominated salt marsh to benefit the light-footed clapper rail. An Engineering Equipment Operator will assist in the long-term maintenance of the outer levees.</p>	-	\$2,000	\$5	\$2,000
<p>Restore the eastern primary salt ponds to tidal action: Recontour the bottom of some ponds to achieve appropriate elevations to support desired habitat types and breach the pond levees to restore an additional 240 acres within the salt works to tidal influence.</p>	-	\$1,500	\$5	\$1,500
<p>Convert the remaining salt ponds to tidal marsh and managed water areas: A Supervising Wildlife Biologist will oversee the restoration of approximately 200 additional acres of salt ponds to tidal influence, while implementing measures necessary to manage salinity, water levels, and water flow within approximately 275 acres of the remaining salt ponds.</p>	1	\$1,500	\$100	\$1,590

High Priority Projects for the South San Diego Bay Unit (continued)	Operating Costs (in thousands)			
	FTEs	One-Time	Recurring Base	Total 1st Year
Minimize disturbance within the restored salt ponds: A maintenance worker will install and maintain appropriate fencing and signage around the eastern perimeter of the salt ponds to minimize the incidence of unauthorized access into the area and to discourage entry into the area by stray dogs, cats, and other mammals that could pose a threat to nesting and feeding wildlife.	.5	\$15	\$34	\$49
Develop an interpretive overlook at the end of 10th Street: Partner with the City of Imperial Beach to improve access to and develop an interpretive overlook on the coastal terrace just to the north of the Bayshore Bikeway and install interpretive panels and spotting scopes to provide opportunities to observe the birds that nest, forage, and rest within the restored salt ponds.	-	\$55	\$1	\$55
Increase opportunities for guided tours of the salt ponds: Working in partnership with the Chula Vista Nature Center, expand the number of guided tours provided at the salt works by acquiring an electric multi-passenger vehicle and increasing the number of tours to two per month between October and mid-February. No tours would be conducted during the nesting season.	-	\$60	\$5	\$60
Continue the Habitat Heroes Environmental Education Program: Identify partners to continue to assist in the funding and implementation of the Habitat Heroes Program with the goal of expanding the program to include additional students.	-	\$10	\$10	\$10
Develop a boardwalk along the southern edge of the Refuge between 7th and 10th Street: Design and construct an elevated pedestrian path to the north of the Bayshore Bikeway between 7 th Street and 10 th Street in Imperial Beach to provide opportunities for wildlife observation and interpretation.	-	\$800	\$1	\$800

	Operating Costs (in thousands)			
	FTEs	One-Time	Recurring Base	Total 1 st Year
Medium Priority Projects for the South San Diego Bay Unit				
Reduce wildlife disturbance in the open waters of the Refuge: Coordinate with the Coast Guard and Harbor Patrol to ensure enforcement of the designated 5 mph speed limit throughout the south bay to benefit wintering waterfowl and other migratory birds and increase Refuge law enforcement presence in the bay by acquiring a patrol boat, enabling periodic patrol of water-related activities.	-	\$50	\$5	\$50
Reduce the accumulation of fishing line within the Refuge: Develop and implement a public outreach program to raise awareness about the dangers to wildlife of improperly discarding fishing line and partner with others to conduct fishing line clean-up days.	-	\$10	\$1	\$10
Develop an observation deck at the end of 8th Street: Design and construct an observation deck to the north of the Bayshore Bikeway at the end of 8 th Street in Imperial Beach to expand opportunities for wildlife observation and interpretation.	-	\$25	\$1	\$40
Construct an elevated observation deck at the end of 13th Street: Design and construct an elevated observation deck at the end of 13 th Street in Imperial Beach to provide residents and visitors with an overview of the restored salt ponds.	-	\$100	\$5	\$100
Improve wildlife observation opportunities at the east end of the Refuge: Design and construct an observation deck at the edge of Pond 29 to provide observation opportunities from the eastern end of the Refuge.	-	\$20	\$1	\$20
Design and implement a “virtual hunt” interpretive program: Working with partners representing the hunting community, design and implement a “virtual hunt” interpretive program that would be conducted along the outer levee of the eastern salt ponds in late fall to interpret waterfowl hunting, historic hunting on the south bay, and hunting within the National Wildlife Refuge System.	-	\$5	\$0.5	\$5
Improve the northern levee of Pond 11 for recreational fishing and wildlife observation: An Outdoor Recreation Planner would determine the improvement required for the northern levee of Pond 11 to accommodate shoreline recreational fishing and an observation platform. This proposal would require new fencing, consideration of the need for public accommodations such as restrooms and trash dispensers, and monitoring by a Biology Technician.	.5	\$350	\$23	\$373

Project Funding and Staffing

To implement all of the proposed actions and achieve the goals and objectives of the CCP for the two Refuge Units, additional funding and staff would be necessary. Presented in the tables below are the current and future (proposed) funding and staff needs for the combined management of the Sweetwater Marsh and South San Diego Bay Units. An explanation of how additional funding and staff needs relate to specific projects is provided above in the Projects Section.

Current Staffing

Base budget FY2004 = \$802,000*

(*includes the three San Diego Coastal Refuges: Sweetwater Marsh Unit, South San Diego Bay Unit, and Tijuana Slough NWR)

Table D-2 Current Staffing for the San Diego Coastal Refuges			
Staff Type	Employment Status	FTE	Salary Rating
<i>Management</i>			
Project Leader	PFT	0.6	GS 14
Deputy Project Leader	PFT	0.6	GS 13
Refuge Manager	PFT	1 (unfilled)	GS 12
Refuge Operations Specialist	PFT	1	GS 11
<i>Administrative</i>			
Administrative Assistant	PFT	0.6	GS 7
Budget Assistant	PFT	0.6	GS 6
<i>Biology</i>			
Wildlife Biologist	PFT	1	GS 11
<i>Public Use</i>			
Park Ranger	PFT	1	GS 4
Refuge Officer	PFT	1	GS 9
Information and Education Specialist	PFT	0.6	GS 11
Refuge Planner	PFT	0.6	GS 12

Future (Proposed) Staffing

Table D-3 Future (Proposed) Staffing for the San Diego Coastal Refuges			
Staff Type	Employment Status	FTE	Salary Rating
<i>Management</i>			
Project Leader	PFT	0.6	GS 14
Deputy Project Leader	PFT	0.6	GS 13
Refuge Manager	PFT	1	GS 12
Refuge Operations Specialist	PFT	2	GS 11
Table D-3 (continued)			
<i>Administrative</i>			

Administrative Assistant	PFT	0.6	GS 7
Receptionist/ Clerk/Typist	PFT	0.6	GS 6
<i>Biology</i>			
Supervising Wildlife Biologist	PFT	0.6	GS 12
Wildlife Biologist	PFT	1	GS 9
Biology Technician	PFT	2	GS 7
Restoration Ecologist	TFT	1	GS 11
<i>Public Use</i>			
Park Ranger	PFT	1	GS 4
Outdoor Recreation Planner	PFT	1	GS 9
Volunteer Coordinator	PFT	0.6	GS 7
Information and Education Specialist	PFT	0.6	GS 11
Refuge Planner	PFT	0.6	GS 12
Refuge Officer	PFT	1	GS 9
Environmental Contaminants Specialist	PFT	0.6	GS 11
<i>Maintenance</i>			
Engineering Equipment Operator	PFT	0.6	WG 8
Maintenance Worker	PFT	0.6	WG 8
Maintenance Worker	PFT	1	WG 5/6

Other Funding Sources

Several projects included in the CCP may be implemented in full or in part by sources other than the Refuge annual budget. These projects, which could include enhancement and restoration projects and public use-related projects, could be funded through partnerships with other local, state, or federal agencies, special legislative appropriations, or grants (i.e., Friends of the San Diego Refuges, National Fish and Wildlife Foundation, Ducks Unlimited, San Diego Audubon, Transportation Enhancement Funds). Other potential sources of funding for restoration projects include: the North American Wetlands Conservation Act Grants Program; the California Coastal Conservancy's Southern California Wetlands Recovery Project; the Service's National Coastal Wetlands Conservation Grant Program, if implemented in partnership with the State of California; the Cooperative Endangered Species Conservation Fund, also if implemented in partnership with the State of California; NOAA's Damage Assessment and Restoration Program for restoration projects applicable to specific oil spills or hazardous substance releases such as the American Trader Oilspill; restoration projects applicable to contaminants restoration programs (i.e., Montrose Settlements Restoration Program); and partnerships with the U.S. Army Corps of Engineers (Corps) under Sections 704, 906(b), and/or 1135 of the Water Resources Development Act of 1986. The Estuary Restoration Act of 2000 also authorizes a program under which the Corps can carry out restoration projects when the costs of the project are shared with non-Federal parties, however, funds to implement these types of programs have not yet been appropriated.

Land Acquisition

The Service will continue to negotiate with the Port, City of Chula Vista, and State Lands Commission to secure management authority for all open water areas included within the approved acquisition boundary for the South San Diego Bay Unit.

Step-Down Management Plans

Some projects such as public use programs and habitat restoration proposals require more in-depth planning than the CCP process is designed to provide. For these projects, the Service prepares step-down plans. Step-down plans provide additional planning and design details necessary to implement the strategies (projects or programs) identified in the CCP. Two step-down plans – the Fire Management Plan and Predator Management Plan – are included in this CCP as Appendices L and M, respectively. Several step-down plans are proposed for completion following the approval of the CCP including a Habitat Management Plan and an Interpretive Trail Plan for the Sweetwater Marsh Unit and Restoration/Engineering Plan and associated Research and Monitoring Plan for the South San Diego Bay Unit.

Compliance Requirements For Plan Implementation

All projects and step-down plans described in the CCP will be required to comply with NEPA and the Improvement Act, as well as a variety of other Federal regulations, executive orders, and legislative acts, which are described in greater detail in Chapter 5 of this document. The Final EIS that will accompany the CCP is intended to address all proposed actions at the program level; however, some actions once defined in greater detail may require additional analysis and review under NEPA. In addition, all projects that involve disturbance of the land, changes to structures more than 50 years old, and/or changes to the use, design, and/or function of the salt works, which has been deemed eligible for inclusion on NRHP, would require coordination with the Regional Archaeologist. To initiate review by the Regional Archaeologist, a Request for Cultural Resource Compliance would be prepared early in the planning process for each proposed project.

Plan Amendment and Revision

CCPs are intended to evolve with each individual Refuge Unit, and the Improvement Act specifically requires that CCPs be formally revised and updated at least every 15 years. The formal revision process will follow the same steps as those implemented for the initial CCP development process, with a major emphasis placed on public involvement. Until a formal revision is initiated, the Service will periodically review and update the CCP (at least as often as every five years) to address needs identified as a result of monitoring or in response to adaptive management procedures. This CCP will also be informally reviewed by Refuge staff while preparing annual work plans and updating the Refuge databases. It may also be reviewed during routine inspections or programmatic evaluations. Results of any or all of these reviews may indicate a need to modify the plan. The goals described in this CCP will not change until they are reevaluated as part of the formal CCP revision process. However, the objectives and strategies may be revised to better address changing circumstances or to take advantage of increased knowledge of Refuge resources. If revisions to the CCP are required prior to the initiation of formal revisions, the level of public involvement and associated NEPA documentation will be determined by the Refuge Manager.

Appendix E

Summary of Public Scoping Comments

Appendix E: Summary of Public Scoping Comments

Introduction

The scoping process for the San Diego Bay NWR CCP is described in detail in Section 5.2 of the draft CCP/EIS. Comments related to the CCP were received via mail, email, and verbally at the initial scoping meetings. Additional comments were provided throughout the planning process, particularly during and immediately following the various public workshops held to address specific issues related to the CCP. A summary of the scoping comments is present below by topic.

Summary of Scoping Comments

ACQUISITION/BOUNDARY ISSUES

- Initiate the procedures necessary to take control (acquire/protect) of all lands and waters within the acquisitions boundaries for the South San Diego Bay Unit.
- Include all of the tidal mudflats in South San Diego Bay into the refuge boundaries, including the mudflats at Emory Cove, in the vicinity of the J Street Marina, and along Sweetwater Marsh.
- Extend the acquisition boundary for the South San Diego Bay Unit to the boundary for the Sweetwater Marsh Unit to create one continuous refuge.
- Incorporate into the Sweetwater Marsh Unit those portions of the D Street fill that are located to the north and west of the current refuge boundaries.
- Include all of Pond 20A within the South San Diego Bay Unit.

PUBLIC USE

General

- Emphasize the wildlife first perspective when considering the type and intensity of public uses to be permitted uses should not be permitted that would negatively impact endangered or other species.
- Limit public use because the refuge has been established for nesting birds.
- Link the public uses on the refuges to other public use areas, such as the Otay Valley River Park.
- Management goals should emphasize wildlife/habitat protection over public recreation uses.
- Promote ecotourism with minimal impacts to resources.
- Withhold final compatibility determination until population information is presented and analyzed.
- Include in the CCP, a thorough evaluation of all recreational activities presently allowed on the refuges and their impacts on native flora and fauna, especially threatened and endangered species.
- Maintain compatible wildlife-dependent recreational activities as a major component of the programs of the refuges.
- Strike a balance between wildlife and people, and manage the refuge as a place for people as well as wildlife, by accommodating passive, quiet human use.
- Manage public use to ensure that the refuge is maintained as a quiet place for waterfowl – the San Diego Bay is heavily used in almost all other areas, even kayaks in small numbers could have an impact on waterfowl.

- Don't restrict access to the refuges; rather take this as an opportunity to build support from future generations.

Hunting/Fishing

- Provide opportunities for dog trials and retrieval training.
- Prohibit dogs on the refuge.
- Provide opportunities for hunting.
- Prohibit consumptive use of wildlife on the refuge.
- Provide opportunities for fishing.
- There are enough fishing opportunities elsewhere in San Diego.
- Provide for youth-related hunting and fishing experiences.
- Prohibit hunting on the refuge.

Wildlife Observation

- Provide visual access to the bird colonies on the Salt Works through the use of video cameras.
- Provide access on the levees for viewing migratory birds within the Salt Works.
- Provide elevated bird blinds at the edges of the Salt Works to provide views of the migratory birds.
- Integrate bird viewing areas along the proposed Bayshore Bikeway.
- Consider the installation of elevated viewing platforms for wildlife viewing between 11th and 12th Streets next to the bike path and north of the Salt Works in the industrial area.
- Preserve the existing sound (ambient noise) characteristics of the salt ponds – avoid increasing human generated sounds in order to preserve evening silence, existing bird “chatter”, and other nature sounds of this environment.

Wildlife Photography

- Provide bird blinds specifically for photographers.
- Provide for tourist photo opportunities.

Environmental Education

- Encourage more involvement with schools (K-6).
- Promote education by providing access for kids.
- Provide education/interpretive programs at the South Bay Unit and Paradise Marsh.
- Select places to educate the public about these coastal resources that will not result in impacts in birds in the area.
- Educate the public about endangered species and how their survival is linked to human survival.
- Provide educational opportunities/birding brochures in Spanish.
- Working with partners, such as the City of National City and Paradise Creek Educational Park Inc., develop interpretive park elements in Paradise Marsh.
- Explain in the CCP how environmental education and interpretation will be provided and identify how these programs will relate to and support the purpose of the refuges.

Environmental Interpretation

- Provide duck feeding stations.
- Consider South Grand Caribe Island as a place for an interpretive stop on a kayak trail.
- Develop a comprehensive (e.g., biological resources, history, agriculture, culture, industry) and coordinated interpretive signage program around San Diego Bay.

- Create a multi-agency brochure that illustrates where all the interpretive signage around the bay are located.
- Establish a satellite interpretive facility near Bay View Elementary School.
- Provide interpretive areas/features through the refuge areas.

Boating

- Provide kayaking opportunities in the South Bay, including interpretive trails, resting areas and rentals.
- Provide a viewpoint for boaters, such as an island.
- Establish restrictions for boats and aircraft, including ultra-lights.

Trails

- Provide seasonal walking/jogging/birding trail around Ponds 10 and 11.
- Prohibit public access within the salt works.
- Limit public access to those areas in which such use would be compatible with wildlife resources, since inappropriate public access could result in impacts to threatened and endangered species, as well as all other nesting birds.
- Provide for a walking path adjacent to the Bayshore Bikeway.
- Allow bicycles to ride to Gunpowder Point on the Sweetwater Marsh Unit.
- Reduce motorized activity through Sweetwater Marsh.
- Consider the installation of boardwalks south of the J Street Marina over the existing mudflats and near the county park on the west side of the bay.
- Limit access to designated trails only and consider the use of physical barriers to ensure that trail users stay on the trail.
- Allow seasonal use of the dikes for walking.

Research

- Identify research opportunities that the refuge can support without adversely impacting biological resources or wildlife-dependent recreation.

WILDLIFE/HABITAT MANAGEMENT

General

- Develop management goals that are science-based and reflect the principles of conservation biology.
- Conduct a rigorous biological assessment and inventory of all flora and fauna inhabiting the refuge.
- Prior to planning, complete a thorough discussion and investigation of the biological integrity, diversity, and environmental health of the refuge areas.
- Follow the standardized sequence for refuge planning suggested in “Science-Based Stewardship: Recommendations for Implementing the National Wildlife Refuge System Improvement Act” (biological inventory ⇒ identification of plan goals ⇒ identification of threats ⇒ choice of focal species ⇒ CCP ⇒ monitoring and implementation ⇒ plan amendment [according to monitoring results]).
- Protect and, where appropriate, enhance wildlife habitat.
- Prepare monitoring and management procedures, define species habitat and monitoring protocols consistent with the MSCP protocols; conduct data management and reporting to allow integration with other MSCP preserve areas.
- Identify potential stressors of the lower Otay River and Sweetwater River systems.
- Ensure that conservation efforts/management do not degrade existing suitable habitat.
- Avoid developing a CCP that is a “mitigation dump.”

- Reintroduce extirpated species.
- Incorporate adaptive management into the CCP through management goals, objectives, and strategies.
- Create corridors to connect different areas of the refuge.
- Avoid Habitat Evaluation Process (HEP) analysis.
- Preserve/enhance brackish marsh/freshwater habitat interface.
- Develop and maintain a database of pertinent scientific information regarding habitats and wildlife.
- Discuss in the CCP how anticipated trends in human population density and recreational use and other significant trends or anticipated problems will affect the distribution and abundance of native plants and animals on the refuges.

Predator Control

- Provide aggressive predator control for the protection of threatened and endangered species and other nesting species.
- Eliminate domestic and feral cats from the refuge year round.
- Make the dikes at the salt works predator proof.
- Use effective, long-term management strategies for protecting threatened and endangered species that are both humane and socially acceptable.
- Include a thorough discussion of predator control in the CCP.
- Incorporate into the predator control discussion, recent scientific research regarding non-lethal predator management methods for protection of threatened and endangered species, specifically with regard to predator exclusion techniques.

Consideration of Specific Organisms

- Consider the effects of restoration proposal on all species, not just endangered species (i.e. shorebirds versus least tern).
- Maintain/enhance existing habitat values for all currently occurring native species (shorebirds, nesting habitat for terns and shorebirds).
- Restore waterfowl habitat to original conditions, provide habitat for brants and widgeons.
- Create salt marsh that provides functional habitat for Belding's savannah sparrows, clapper rails, etc.
- Include specific management strategies for sea turtles.
- Consider insects, including wandering skipper, salt marsh skipper, globos dune beetle, tiger beetle, and lutica sand spiders, in protection, enhancement, and restoration planning.
- Study invertebrate populations in all habitats, terrestrial and aquatic.
- Restore the population of silvery legless lizards in the dunes.
- Pursue rare plant restoration and enhancement for species such as *Dudleya variegata* and *Lotus nuttalliana*.
- Establish as the primary management goal actions that benefit wintering and breeding birds.
- Optimize habitat conditions during the winter as well as during breeding season.
- Maximize nesting sites for terns, skimmers, and plovers.
- Manage the refuge primarily for the protection of migratory birds, breeding, and wintering birds.

Salt Ponds

- Consider the existing benefits of the salt works for shorebird use.
- Preserve brine shrimp, brine fly, hypersaline habitat to provide food source.
- Restore marsh habitat in the salt ponds without destroying the hypersaline habitat.

- Maintain the current salt works to preserve the current hypersaline environment.
- Restore the habitat in the salt ponds.
- Develop an understanding of the salt works ecosystem and its benefit before implementing changes.
- Explore if and how brine shrimp could be maintained in the salt ponds without making salt.
- Understand the different target areas of habitat enhancement/restoration will have different impacts on the integrity of salt production capacity (the more dilute the unit, the less effect on the system).
- Phase any changes in the salt operation to avoid impacts to existing habitat quality – don't disrupt the biogeochemistry of the system.
- Investigate various sizes of salt works operations that would be consistent with management objectives.
- Maintain the dikes within the salt ponds whether or not the salt making operation is continued.
- Breach the dikes within the salt ponds to create islands, if the salt making operations are discontinued.
- Consider creating nesting islands in the salt ponds.
- Consider Pond 10A as important biological habitat for herons and egrets.

Uplands

- Preserve upland transition areas and upland habitat around the Bay for sensitive and candidate species such as Loggerhead Shrike, Burrowing Owl, Northern Harrier, Horned Lark, and jack rabbit.

RESTORATION

Sweetwater Marsh Unit

- Restore Paradise Marsh, including reworking unsuccessful or incomplete restoration projects.
- Expand and reconnect the former 5.6 acres of marsh north of F Street to the F&G Street Marsh. Remove J Street in this area.
- Restore and improve tidal action in the F&G Street Marsh.

South San Diego Bay Unit

- Restore the degraded portions of the Otay River, while protecting existing important shorebird foraging areas.
- Integrate the restoration of Nestor Creek into the Otay River restoration proposals
- Restore coastal sage scrub on Egger-Ghio.
- Re-establish corridors between the Otay River Valley and the Bay for upland birds.
- Restore degraded salt ponds.
- Determine the most appropriate hydrologic restoration objectives for Egger-Ghio, and then develop a conceptual habitat restoration plan that is consistent with these objectives.
- Seek to correct problems at the Chula Vista Wildlife Reserve.
- Evaluate the extent of restoration, protection, and enhancement of habitats that is needed to sustain healthy populations of native plants and animals on the refuge.

MANAGEMENT OF INVASIVE SPECIES

- Eliminate/control non-native, invasive plants.
- Control/eradicate populations of Argentine ants on the refuge.
- Develop strategies for preventing new invasive species from becoming established on the refuges.

- Identify the current invasive species problems on the refuges and identify appropriate management responses.

HYDROLOGY/WATER QUALITY

- Identify methods for improving the quality of the runoff/storm water that flows from Nestor Creek and the Otay River, while also improving wetlands.
- Conduct a hydrologic study of Nestor Creek to determine if there is a connection between South Bay and the Tijuana floodplain.
- Evaluate the geomorphology of the lower Otay River, including its tributary canyons, to determine which wetland communities can be supported in the area.
- Address measures needed to maintain or restore water quality.

OPERATIONS

General Issues

- Develop a management overlay for the north end of the Otay River to give the Service some management authority.
- Monitor speeds in the bay and strictly enforce the 5 mph speed limit.
- Ensure adequate staff, training, and equipment for the refuge.
- Establish a long-term, extensive monitoring/research program to evaluate changes on the refuge.
- Monitor and record public access effects on wildlife.
- Secure the perimeter of the Sweetwater Marsh Unit to minimize unauthorized public access, particularly at the Sweetwater Channel and Paradise Creek intersection.

PROCEDURAL ISSUES

- Conduct bilingual meetings and provide bilingual handouts/meeting notices.
- Work closely with the environmental community.
- Involve a group of stakeholders in the planning process.
- Allow Audubon to participate on the core team.
- Conduct single-issue public workshops.
- Make the vision statement and goals for the refuges available for public review and comment during the scoping and well before the preparation of the CCP and NEPA document.
- Take care to ensure that compliance with both NEPA and the Refuge Act are accomplished in the combined draft CCP/environmental document.
- Ensure that the California Department of Fish and Game is given the opportunity to participate in the process.
- Establish mechanisms to provide for thorough and responsive feedback to public comments made during the planning process.

PLANNING

- Allow for green space/park on the south end of Pond 20A and Egger-Ghio.
- Consider the inclusion of an oil spill mitigation plan in the CCP.
- Provide graphics in the CCP that demonstrate how the coastal areas are connected to the inland areas.
- Keep the planning process short and begin implementation immediately upon CCP approval.
- Consider the regional planning resource conservation and management objectives for the lower Otay River and Sweetwater River when developing the CCP.
- Address the relationship of the CCP to other existing landscape-level planning efforts.

- Establish and clearly state priorities for the activities proposed in the plan.

ADJACENT LAND USES

- Identify opportunities to connect commercial interests to the refuge.
- Work to achieve a good transition between Refuge property and any future commercial development that occurs on the south end of Pond 20A.
- Limit development between the two portions of Sweetwater Marsh and the adjacent bay front.
- Coordinate with Chula Vista planning regarding development adjacent to Sweetwater Marsh.

PARTNERSHIPS

- Identify specific partnership opportunities for funding projects or creating volunteer projects.

STEWARDSHIP PROJECT ISSUES

- Protect the snowy plover nesting areas on the site.
- Identify mitigation for the Navy on the Stewardship Project area – then the Stewardship Project could be replaced with a Refuge Overlay.
- Restore vernal pool habitat on the site.
- Remove *Carpobrotas edulis* at the site before it takes over everything on the dunes and other uplands.
- Survey for fairy shrimp in the existing vernal pools.

BAYSHORE BIKEWAY

- Provide screening along the bikeway in locations where shorebirds using the salt pond areas could be flushed.
- Select the least destructive route for the bikeway.
- Reroute the bike path from the tracks to the berm located on the south side of the tracks to allow more opportunities for river restoration.
- If Pond 20A is developed, align the bike path within the refuge/development interface.
- Upgrade the existing bike path.
- Complete the Bayshore Bikeway from E Street north to 24th Street.

MISCELLANEOUS QUESTIONS

- What is the timing for beginning work on the Stewardship Project?
- Why is Pond 20A excluded from the Refuge boundary, since it is an integral part of the system?
- Is the western refuge boundary provided on the maps correct? Why are the channels leading to the Coronado Cays not shown on the maps? What is their status with regards to the Refuge? Does the FWS have jurisdiction over them? Was this negotiated before the refuge was established?
- Who should someone call to report unauthorized activity on the refuge?
- Who has jurisdiction on the refuge (land/water)?
- If the South Bay Power Plant goes off line, what constraints would be placed on restoration due to the presence of sea turtles in the area?
- What is the biological status of pond 20A?
- Is the Comprehensive Conservation Plan a regulatory document for a local jurisdiction?
- What is the full range of alternatives that may be considered?

- The recognition of edge effects typically has what response from your agency, internal or external redress?
- Does a Comprehensive Conservation Plan include recommendations for land use changes or development standard modifications on properties adjacent, upstream, or near a refuge?
- Will hunting be considered as a possible public use on the refuge?
- Will there be any consideration of proposing additional boating restrictions on the Bay?

Appendix F

Description of the Salt Works Operation

Appendix F: Description of the Salt Works Operation

Brief History

The first formal reference to a commercial solar salt operation in south San Diego Bay is that of the La Punta Salt Works, which according to historic records began salt production in 1871 (*Gustafson and Gregory 2001*). Salt production in the south bay may however have begun prior to that time, based on one record from the San Diego Division of Natural Resources that cited 300 tons of salt production in San Diego Bay in 1870. The exact location of the La Punta Salt Works has not been verified, but is believed to have been located to the southwest of the current salt plant on Bay Boulevard. This facility appears to have been in operation until about 1901. In 1902, the Western Salt Company established a solar salt operation about a quarter of mile northeast of the La Punta Salt Works (*Gustafson and Gregory 2001*) within a portion of the present day salt works. By 1911, this operation had expanded into the south end of the bay. Additional changes to the configuration of the ponds have occurred since that time. The current operation encompasses approximately 1,035 acres and incorporates much of the southern end of San Diego Bay (Figure F-1). With the exception of brief closure in 1916 when flood waters severely damaged the salt plant and several ponds, salt has been produced continuously at this site since 1902.

Current Operation

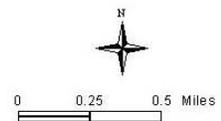
South Bay Salt Works is the current operator of this facility, which produces salt through a process of solar evaporation. The salt works consists of a series of diked ponds (Figure F-2) that are designed to facilitate the concentration and ultimate precipitation of salts from bay water. Once seawater is taken from the bay, it is moved between the ponds through pumping and gravity flow. Approximately 60,000 to 80,000 tons of common salt (sodium chloride) are produced each year at this facility. This salt is sold commercially and used for water softeners, nitrate removal, ion exchange, pickling, deicing, as a dyeing additive, brine for petroleum products, and in the tuna industry as a means of controlling brine temperatures. Another salt produced as a byproduct of solar salt production is magnesium chloride, which is purchased by several industrial users in the area.

The evaporation ponds that form this solar salt operation can be divided into four categories based on specific gravity, which is defined as the ratio of the mass of a sample of seawater to the mass of an equal volume of pure water (*Stadtlander and Konecny 1994*). The four categories of ponds include the primary system, secondary system, crystallizer system, and the heavy brine or bittern ponds (refer to Figure F-2). Throughout the solar salt production industry, salinities in salt ponds are measured using a hydrometer scale, which describes salinity in degrees Baume (°Be) rather than specific gravity. A more common way of describing salinity would be in terms of total dissolved solids or parts per thousand (ppt). The conversion from °Be to total dissolved solids (TDS) or ppt is: $TDS = (13 \times \text{°Be}) - 21$ (*Siegel and Bachand 2002*). In terms of TDS, the average salinity value for seawater is 35 ppt (*Siegel and Bachand 2002*). In San Diego Bay, salinity levels can be quite variable, particularly at the south end of the bay. Mean salinity within the south bay between July 1994 and April 1999 ranged from 31.6 ppt in April 1998 to 38.6 ppt in October 1996 (*Allen 1999*).



Figure F-1
Location of the Salt Works in San Diego Bay

Source: USFWS, Local Agency Partnership 2000 (2 ft imagery)



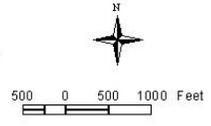
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Figure F-2 South Bay Salt Works

- Primary ponds
- Pickling ponds
- Secondary ponds
- Crystallizer ponds

Refuge management boundary



Source: USFWS, Local Agency Partnership 2000 (2 ft imagery)

Carlsbad Field Office - 2003
/stem/stacey/ssdbay/fig_4-03/figures.apr

To produce salt within the salt pond system, bay water is introduced into the primary pond system, which includes Ponds 10A and 10 through 15, through a tide gate located between the Otay River and Pond 10. This gate is pressure-regulated opening and allowing intake of water when the tidal level in the river is higher than the pond level. As the tidal level in the river lowers, the water pressure on the pond side closes the gate. As the water moves through this primary system, it is transported from Pond 11 to Pond 12 via a 30-inch siphon pipe that extends under the Otay River. The water is moved through the primary pond system via gravity flow as the appropriate salinity levels are reached in each pond. By the time the incoming seawater has reached the end of the primary system, the salinity has increased from 3.5 °Be to between 7 and 10 °Be or 70 to 109 ppt (*Western Salt Company 1997*). Once in the system, the water in the ponds is often referred to as brine. The depth of the primary ponds varies due to topographic variation within each pond, as well as due to seasonal variations in volume of water present in each pond. Although the average depth in these ponds is approximately three feet, the water level in Pond 10A can be significantly lower and during some parts of the year, the bottom of the pond may be exposed. During the intake of bay water into the system, a variety of fish and crustacean species enter the primary system, where they are able to tolerate the slightly increased salinities of bay water within the initial ponds of the primary system.

As needed, the brine is lifted by pump to the secondary system (Ponds 20 through 27), which consists of a series of smaller ponds. As the brine moves through the system, the salinities increase from 7 °Be to 19.5 °Be (70 to 232 ppt). Pond depths range from two to five feet at center. At about 12.9 °Be (147 ppt) gypsum, a crystal formed from the chemical precipitation of calcium and sulfate to form calcium sulfate, begins to precipitate from the water column forming a gypsum crust on the bottom of the ponds (*Siegel and Bachand 2002*). While attempting to survey the bottom elevations of these ponds, Ducks Unlimited engineers discovered that the gypsum crust in these ponds is highly irregular, with formations reminiscent of those gypsum formations found in Mono Lake.

At the end of the secondary system are the pickling ponds (Ponds 28, 29 and 30), which have salinities that range from between 15 °Be and 25.5 °Be (174 to 310 ppt). These ponds are used to distribute the concentrated brine into the crystallizer ponds. It is also in this part of the system that most of the remaining gypsum precipitation occurs. At about 25.5 °Be (310 ppt) the brine is saturated with sodium chloride and bittern salts (more soluble salts and ions consisting primarily of chloride, magnesium, sulfate, potassium, and bromide) and is ready to be introduced to the crystallizer system.

Precipitation of sodium chloride occurs within the crystallizer ponds (Ponds 40 through 48 and 50 through 52), which have salinities ranging from 25.5 to just under 29 °Be (310 to 356 ppt). (It should be noted that although Ponds 40 and 50 through 54 are not located within the refuge boundary, these areas are currently leased by the salt works operator for use in the existing solar salt operation.) Once the salt has precipitated out, the pond is drained and the salt is removed from the crystallizer ponds with heavy equipment such as front-end loaders.

Brine is eliminated from the crystallizer ponds before it reaches 29 °Be because brine of less than 29 °Be and brine of 29 °Be or greater do not mix. This situation can result in uneven crystal development. The brine discharged from the crystallizer ponds is referred to as heavy brine or bittern, which has a salinity of 29 to 30 °Be (356 to 369 ppt). Bittern is comprised of sodium chloride, magnesium sulfate and magnesium chloride. Sodium chloride and magnesium sulfate continue to be precipitated out in this part of the system, leaving magnesium chloride in a liquid state that is sold to local industry. The salts that precipitate out during this process are harvested

and deposited into an unused production pond before being redistributed throughout the system (*Western Salt Company 1997*).

Once the salt is removed from the crystallizer ponds, it is transported to the washer complex where it is washed and rinsed. It is then moved to a stockpile for drying and then processed for sale in bags or shipped in bulk as needed to commercial and industrial users.

References Cited

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Appendix G

**Federal and State Ambient Air Quality
Standards**

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ¹		Federal Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	0.12 ppm (235 µg/m ³) ⁸	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	—		0.08 ppm (157 µg/m ³) ⁸		
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		50 µg/m ³		
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard		65 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	15 µg/m ³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m ³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		—		
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m ³)		—		
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m ³)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (365 µg/m ³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m ³)	
	1 Hour	0.25 ppm (655 µg/m ³)		—	—	
Lead ⁹	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m ³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ⁹	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

See footnotes on next page ...

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM₁₀, PM_{2.5}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.
8. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact U.S. EPA for further clarification and current federal policies.
9. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Appendix H

Air Quality Calculations



September 30, 2004

Ms. Victoria Touchstone
U.S. Fish and Wildlife Refuge Complex
6010 Hidden Valley Road
Carlsbad, CA 92009

RE: Air Emission Estimates for the South Bay Salt Works (Requisition 1168040039)

Dear Ms. Touchstone:

As you requested, Jones & Stokes has generated emission estimates for two restoration alternatives (14 scenarios) described in the Sweetwater Marsh and South San Diego Bay Units of the San Diego Bay National Wildlife Refuge draft Comprehensive Conservation Plan and Environmental Impact Statement.

The emission estimates were generated to determine whether either of the project's alternatives would generate construction-related emissions that exceed the federal conformity thresholds for criteria pollutants, specifically reactive organic gases (ROG), carbon monoxide (CO), nitrogen oxides (NOx), or particulate matter less than 10 microns in diameter (PM10). At this time, a conformity analysis is not required for PM2.5.

The emission estimates were based on information provided for each restoration alternative, which included project schedule, soil import/export estimates (cubic yards of material), estimated truck trips needed to haul material, and estimates of the type and numbers of construction equipment that would be used for individual project phases. This information was to generate estimates of exhaust emissions and fugitive dust (PM10) generation. Exhaust emissions included on-road vehicles; such as trucks used to haul material on- and off-site, vendor trips, and worker commute trips. Exhaust emissions also included off-road construction equipment emissions.

The California Air Resources Board's (ARB) EMFAC2002 model was used to generate estimates of on-road vehicle emissions. Off-road emissions were based on ARB's off-road construction model. A modified version of the road construction emissions model was used to generate estimates of fugitive dust emissions and worker commute trips.

The emission estimates generated for each scenario are summarized in the following table. They show that each of the alternatives would generate emissions substantially below the federal



conformity thresholds applicable within the San Diego Air Basin. Consequently, a conformity determination would not be required for this project.

Options	TONS PER YEAR			
	ROG	CO	NOx	PM10
Otay Option 1 only	1	9	11	4
Otay Option 1 and Salt Works Option 1	3	23	27	10
Otay Option 1 and Salt Works Option 2	3	25	28	8
Otay Option 2 only	2	16	16	4
Otay Option 2 and Salt Works Option 1	4	29	32	9
Otay Option 2 and Salt Works Option 2	4	30	32	9
Salt Works Option 1 only	2	14	15	5
Salt Works Option 2 only	2	15	16	6
Restored Salt Ponds	1	8	11	5
Restored Salt Ponds + Otay Restoration Option 1	3	18	22	10
Restored Salt Ponds + Otay Restoration Option 2	3	24	27	9
Restored Salt Ponds (Breach)	2	11	13	5
Restored Salt Ponds (Breach) + Otay Restoration Option 1	3	21	25	10
Restored Salt Ponds (Breach) + Otay Restoration Option 2	4	27	30	9
Conformity Threshold (tons/year)	100	100	100	100

Please let me know if you have any questions or concerns regarding these emission estimates.

Sincerely,

Tim Rimpo
Air Quality Project Director